

Sci.

VOL. 2, No. 8

AUGUST

GENERAL SCIENCE

1915

THREE DAY LOAN

THE AGRICULTURAL GAZETTE OF CANADA

THE IMPROVEMENT OF CREAMERY BUTTER

PLOUGHING MATCHES

THE MODERN RURAL SCHOOL

S
1
A274



DEPARTMENT OF AGRICULTURE
OTTAWA, CANADA

274

CI/TECH

TO SUBSCRIBERS:

PLEASE PRESERVE CAREFULLY FOR REFERENCE; AN INDEX WILL BE PUBLISHED WHEN THE VOLUME IS COMPLETE.

TO THE PRESS:

FREELY USE ALL OR ANY OF THE INFORMATION CONTAINED IN THIS MAGAZINE.

TO AGRICULTURAL OFFICIALS:

PLEASE FORWARD PROMPTLY TO THE AGRICULTURAL GAZETTE ANNOUNCEMENTS, APPOINTMENTS, RESOLUTIONS AND OFFICIAL REPORTS.

MANUSCRIPT FOR THE FORTHCOMING NUMBER SHOULD REACH THE EDITOR NOT LATER THAN THE 10th OF THE PRECEDING MONTH.

VOL. 2, No. 8



August, 1915

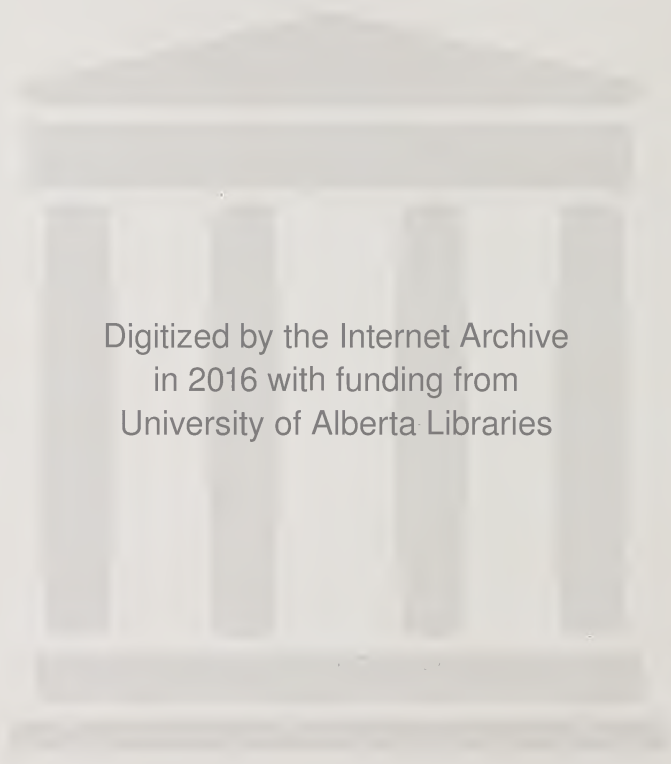
DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE

The Agricultural Gazette of Canada

EDITOR · J. B. SPENCER, B.S.A.

Issued by direction of
THE HONOURABLE MARTIN BURRELL
Minister of Agriculture

OTTAWA
GOVERNMENT PRINTING BUREAU
1915



Digitized by the Internet Archive
in 2016 with funding from
University of Alberta Libraries

CONTENTS

	PAGE
The Problem in Butter-making.....	721

PART I

THE DOMINION DEPARTMENT OF AGRICULTURE

The Dominion Experimental Farms:—	
The Division of Field Husbandry:	
Crop Rotation at Ottawa, by W. L. Graham	723
The Division of Animal Husbandry:	
Milking Machines, by E. S. Archibald.....	724
The Division of Horticulture:	
Vegetable Gardening, by M. B. Davis.....	727
Plant Breeding Work, by A. J. Logsdail.....	728
Ornamental Gardening, by F. E. Buck.....	728
The Division of Cereal Husbandry:	
Harvesting the Experimental Plots, by G. G. Moe.....	729
The Division of Poultry Husbandry:	
Progressive Operations, by F. C. Elford.....	730
The Division of Chemistry:	
Seaweed as a Fertilizer, by Frank T. Shutt.....	731
The Entomological Branch:—	
Two Serious Fruit Pests New to Canada, by C. Gordon Hewitt.....	732
The Fruit Branch:—	
The Market Problem, by Fred. H. Grindley.....	738
The Dairy and Cold Storage Branch:—	
Notes, by J. A. Ruddick.....	739
The Live Stock Branch:—	
Appointments under the New Markets Policy.....	740
The Health of Animals Branch:—	
Prohibitory Order Amended.....	740
Tuberculin Testing at Saskatoon.....	741
Fly Time.....	742

PART II

PROVINCIAL DEPARTMENTS OF AGRICULTURE

Improvement of Creamery Butter:—	
Prince Edward Island, by Theodore Ross.....	743
Nova Scotia, by W. A. McKay.....	744
New Brunswick, by J. B. Daggett.....	746
Quebec, by J. D. Leclair.....	747
Ontario, by G. A. Putnam.....	750
Manitoba, by J. W. Mitchell.....	754
Saskatchewan, by W. A. Wilson.....	758
Alberta, by C. Marker.....	761
Ploughing Matches:—	
Nova Scotia, by F. L. Fuller.....	766
Quebec.....	767
Ontario, by J. Lockie Wilson.....	767
Manitoba, by S. T. Newton.....	770
Saskatchewan, by S. E. Greenway.....	772

Prince Edward Island:—	PAGE
The Inspection of Meats.....	775
Nova Scotia:—	
Trap Nest Improvement, by J. P. Landry.....	775
Macdonald College:—	
Marketing Wool Co-operatively, by H. Barton.....	775
Ontario:—	
District Representatives' Conference.....	778
Notes from District Representatives.....	780
Short Courses for Judges.....	783
Pure Bred Live Stock Census.....	783
Apples Half a Crop.....	784
The Directorship of Elementary Education.....	784
Manitoba:—	
Better Farming Instruction via Automobile.....	784
Saskatchewan:—	
Agricultural Implement Commission.....	785
Recent Educational Methods.....	786
British Columbia:—	
Apple Packing Contests.....	787

PART III RURAL SCIENCE

The Modern Rural School:—	
Nova Scotia, by A. H. Mackay.....	788
Quebec, by the Hon. Boucher de La Breure.....	792
Macdonald College:	
Example Buildings, by Sinclair Laird.....	793
Ontario:—	
Summarized from Official Publications.....	796
Manitoba, by Chas. K. Newcombe.....	797
Saskatchewan, by A. W. Cocks.....	799

PART IV SPECIAL CONTRIBUTIONS, REPORTS OF AGRICULTURAL ORGANIZATIONS, NOTES AND PUBLICATIONS

Two Modern Country School Houses.....	803
Helping the Community through the School, by Susan V. Powell.....	806
Seed Growing Centres in Canada, by L. H. Newman.....	807
Boys' and Girls' Cow Tests.....	809
Community Dairy Shows.....	809
Quebec City's New Milk By-law.....	810
Societies and Associations:—	
The Holstein-Friesian Association.....	812
Prince Edward Island Sheep Breeders.....	812
New Publications:—	
The Dominion Department of Agriculture.....	813
The Provincial Departments of Agriculture.....	813
Notes.....	817
Index to Periodical Literature.....	820

The Agricultural Gazette

OF CANADA

VOL. II

AUGUST, 1915

No. 8

THE AGRICULTURAL GAZETTE of Canada is published monthly, in English and in French, by the Dominion Department of Agriculture. It is not intended for general circulation. A limited number of copies, however, are available to subscribers at \$1.00 per annum, or 10 cents per copy.

Subscriptions should be forwarded to the Editor, Agricultural Gazette, Ottawa.

THE PROBLEM IN BUTTER-MAKING

BY J. A. RUDICK, DAIRY AND COLD STORAGE COMMISSIONER

THE improvement in the quality of Canadian butter in recent years has resulted in a great increase in home consumption and consequent enlargement of the market. Every effort which has been made through the different agencies, both federal and provincial, to raise the standard of quality has been well worth while and the results are a standing encouragement to further effort with the same object in view.

In those sections of the country where the cream gathering system is in vogue, no single measure for the improvement of the quality of the butter is of greater importance, or is likely to be more successful, than that of cream grading. The results already attained in Alberta, Saskatchewan and Manitoba, especially in Alberta, are abundant proof of the practicability and efficiency of the methods which have been adopted in these provinces for the grading of the cream as supplied to the creameries. If cream grading can be supplemented by a workable system of butter grading, which will ensure a fair discrimination in price according to grade, the stimulus thus given to everything which makes for better quality will be very great.

The value of the grading of the cream or butter lies in the fact that it leads to payment on a quality basis. It is the lack of this discrimination in the butter trade generally, especially in relation to the primary sale by the manufacturer, which stands as the greatest barrier to progress that the industry has to face. All arguments or representations looking towards improvement lose their effect when it can be asserted in reply that the butter of inferior quality can be sold at the same price as other butter produced under very much better conditions.

We are not concerned for the moment with the reasons why the merchants are impelled to do business in this way, we merely want to point out a few facts as briefly as possible. This tendency to strike an average value neither encourages the progressive butter maker who turns out a superior article, nor punishes the indifferent or careless maker whose product is of inferior quality. Neither the creamery owner nor the patrons of the creamery can be expected to take much interest in the matter of quality when they see butter of widely different quality being sold for practically the same price.

If there were the same discrimination in value in the purchase of butter from the manufacturer as there is in the retail trade the patrons of many creameries would soon awaken to the fact that they were receiving a very much smaller return for their milk or cream than the patrons of other creameries where the business is conducted on better lines. How to secure full value and a reasonable discrimination in price is one of the greatest problems before the dairymen of this country. It is the problem of problems. If it were solved most of the other problems would solve themselves. There is no question before the dairymen of Canada to-day which deserves more careful study and attention.

NOTE:—In Part II of this issue officials of the Provincial Departments of Agriculture relate what their respective branches are doing to improve the quality of creamery butter.
—EDITOR.



A MODEL CREAMERY

The creamery represented in the above illustration has been operated by the Dairy and Cold Storage Branch, at Brome, Quebec, to demonstrate the advantages of certain improvements in creamery buildings; to determine the value of new apparatus and machinery, and new methods and practices in the manufacture of butter; to encourage the production of winter milk, and to demonstrate proper business methods in the management of creameries. This creamery, erected in 1912, was recently destroyed by fire.

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF FIELD HUSBANDRY

CROP ROTATION AT OTTAWA

BY W. L. GRAHAM, B.S.A., ASSISTANT TO DOMINION FIELD HUSBANDMAN

ON the Central Experimental Farm there are at present 13 different rotations being tested. The object in view is to obtain definite results as to the merits of these rotations managed under a system of cultural methods varied to comply with different conditions. Moreover, these results should serve the farmer as a basis or general guide in the management of farm crops.

By rotation is meant the following of one crop with another in a regular repeated succession. It means further a sequence of crops which insures supplies of plant food in the soil of such a character as to stimulate high yields of each particular crop. In arranging a rotation, therefore, it is necessary to have some knowledge of the food requirements of different crops and to know something of the value of residues from the different crops included. From experiments conducted for a period of years it is evident that good rotations include:—(1) roots or corn; (2) cereals; (3) meadow or pasture crops. Various combinations of these three classes are possible, but a rotation there must be in order that

the farmer may economically render his farm more productive.

The first experience here with rotations was with one of five years' duration which showed such remarkable results that in 1904 it was decided to inaugurate a series of rotations. These included rotations considered suitable for the average live stock farm, and two four-year rotations of shallow ploughing and subsoiling versus deep ploughing in preparation for hoed crops. In addition to the foregoing it was found possible to introduce in 1909 three rotations having for object the obtaining of some information as to the value of commercial fertilizers in regular farm rotation. In 1912 still another rotation was added to this series in which no fertilizer of any kind was used. Hence in 1911 are to be found the average results of 8 years of experiments with regular rotations. The year 1914 terminated an 11 years' test of shallow ploughing and subsoiling versus deep ploughing and 6 years' results from the test with fertilizers. A fairly full account of these results and an outline of the rotations will appear in the annual report.

THE DIVISION OF ANIMAL HUSBANDRY

MILKING MACHINES

BY E. S. ARCHIBALD, B.S.A., DOMINION ANIMAL HUSBANDMAN

AS reported previously, the experimental work with milking machines started in the fall of 1912, the first year's work dealing largely with a comparison of the Sharples milking machine with good hand milking. All experimental work with milking machines was of necessity discontinued on October 11, 1913, due to the loss of the buildings by fire. The new building being completed, the Sharples and several other makes of milking machines were installed, and an experiment was started on November 1, 1914.

A summary is here given of the year's work with the Sharples mechanical milker as compared with the previous year and the consequent year on hand milking under somewhat similar conditions. The table on following page gives the year's lactation periods of twenty cows during 1911 on hand milking, 1912 and the first part of 1913 with the milking machine, and the latter part of 1913 and 1914 to November 1 on hand milking.

DEDUCTIONS FROM FIRST EXPERIMENT

It will be noticed that the total milk flow per cow per day in 1912 is greater than in 1911, this being due probably more to the fact that the lactation periods were shorter and the cows were one year older than to the influence of the milking machine. However, the year 1913 showed a marked increase over the year 1912. The average of the years 1911 and 1913 compared with 1912 shows that the cows have not very materially decreased in their milk flow owing to the influence of the Sharples milking machine. The very marked increase in parts of the

lactation period for 1914, included in this table, is due largely to the fact that fewer cows are included, and, even more important, that the lactation periods are not completed, consequently the average per cow per day is higher than it would be after all the cows have completed their full milking periods. Although nothing definite can be drawn from the table, yet we feel safe in saying that insofar as these and other figures for cows not included in this table go, the milking machine has not shown a very marked decrease in the milk produced by this herd.

The quantity of strippings produced after the milking machine was quite variable, in the case of some cows the strippings after each milking amounting to from $\frac{1}{2}$ to $1\frac{1}{2}$ pound. These, however, were the exceptions, and the average strippings taken from the cow after the machine ranged from $\frac{1}{8}$ to 1 pound per cow per milking.

The commercial difficulties with this machine encountered are as follows:—

1. Cows inclined to be nervous sometimes kick off the teat cups. These cups not being suspended in any way immediately fall to the floor and suck in bedding, dust, or any other filth, much to the detriment of the quality of the milk. Although such accidents are more or less rare, still it must be remembered that one accident of this kind per milking will largely deteriorate the quality of the milk for that milking if the milk is poured with the clean, pure milk from the other cows, and if the machine is again used on another cow without being thoroughly washed and sterilized.

2. A little trouble was met with in the pulsators occasionally sticking,

SUMMARY FOR SHARPLES MILKING MACHINE EXPERIMENT

MILKING MACHINES

725

Breed	1911, Hand Milking				1912, Machine Milking				1913, Hand Milking				1914, Jan. 1 to Nov. 1, Hand Milking			
	Age at Start	Days Milking	Milk Produced	Average Milk per Day	Age at Start	Days Milking	Milk Produced	Average Milk per Day	Age at Start	Days Milking	Milk Produced	Average Milk per Day	Age at Start	Days Milking	Milk Produced	Average Milk per Day
Marjorie 4th.	3	298	Lb. 6,480	21.7	4	242	Lb. 5,657	23.4	7	327	Lb. 9,493	29.0	8	175	Lb. 7,610	43.4
Flavia 2nd.	5	267	9,364	35.1	6	332	10,319	31.0	7	327	9,493	29.0	8	175	7,610	43.4
Jessie D.	5	273	5,905	21.6	6	287	5,415	18.8	7	237	4,746	20.0	8	175	7,610	43.4
Ottawa Kate.	4	281	5,644	20.0	5	367	10,451	28.4	6	395	12,262	31.0	7	183	8,192	44.7
Denty 4th.	4	244	7,339	32.2	5	269	8,639	32.3	6	341	7,280	21.4	7	175	6,323	36.1
Marjorie 2nd.	5	312	7,617	24.4	6	244	5,547	22.7	7	327	9,493	29.0	8	175	7,610	43.4
Flavia 3rd.	3	307	6,776	22.1	4	223	7,223	22.4	5	269	6,258	23.3	6	186	7,068	38.0
Marjorie 6th.	2	384	7,203	18.7	3	318	5,334	16.8	4	368	9,216	25.0	5	212	5,474	25.7
Ottawa Kate 2nd.	2	371	6,623	17.9	3	299	5,056	16.9	4	368	9,216	25.0	5	212	5,474	25.7
Maggie Pulchrae.	2	419	6,552	15.6	3	308	7,258	23.5	4	285	6,929	24.3	5	182	9,024	25.6
Denty 3rd.	6	335	7,635	22.8	7	288	5,448	18.9	8	408	9,757	23.9	9	406	9,671	23.8
La Belle.	6	336	6,815	20.2	7	315	5,764	18.3	8	304	4,767	15.6	9	406	9,671	23.8
Fortune 4th.	4	286	7,462	26.1	5	289	5,834	20.1	6	413	9,722	23.5	7	123	4,690	38.6
Aromaz.	4	305	6,769	22.2	5	306	6,614	21.6	6	403	7,925	19.6	7	165	5,943	36.0
Inoquette 3rd.	3	261	4,803	18.4	4	396	7,810	19.7	5	381	6,830	17.9	6	123	4,690	38.6
Fortune Cadette.	3	292	4,950	16.9	3	319	5,797	18.2	4	335	6,002	17.8	5	340	7,336	21.5
Archer's Pearl.	2	297	4,148	14.0	3	615	8,120	13.2	4	340	7,236	21.2	5	340	7,336	21.5
Ottawa Deanie.	2	335	4,780	14.2	3	359	5,083	14.4	4	340	7,236	21.2	5	340	7,336	21.5
Ottawa Itchen.	6	280	7,029	25.1	7	296	4,269	14.4	8	350	8,415	24.0	9	349	8,484	24.2
Itchen's Favour.	2	546	8,370	13.5	3	363	6,339	17.6	4	350	8,415	24.0	5	271	6,384	23.5
Totals.	20 head	6,429	132,764	.....	20 head	6,385	132,087	.....	15 head	5,156	116,838	.....	13 head	3,119	91,461	.....
Averages.	.....	321.4	6,638	20.7	.....	318.4	6,604	20.6	.....	343.7	7,789	22.6	.....	239.9	7,035.4	29.3

N.B.—(1) Sharples Machine started July, 1912; (2) the year denotes the time when the cows freshened; (3) in 1912 year, many of the above mentioned cows were milked a month or two by hand; (4) in 1913 year, many of the above mentioned cows were milked two or three months by the machine.

becoming slow. The careful supervision of the herdsman was required to keep these pulsators thoroughly cleaned and oiled in order that the pulsation might be normal and uniform.

3. Absolute gentleness in the introduction of the machine to the cows is necessary in order not to antagonize any animals permanently against the machine.

4. The absolute cleansing of the machine was necessary in order to keep down the bacterial count. This point will be dealt with in the succeeding paragraph.

Undoubtedly it has been proven in this year's test that the successes or failures which may be met with depend very largely on the man who is operating the machine. Carelessness in adjusting the machine to the cow, lack of intelligence in operating each machine to suit the individual needs of each cow, or any similar lack of care, will undoubtedly cause a loss from that cow upon introducing the milking machine.

PURITY OF THE MILK

During the first six months of this test it was found that the milk produced by the Sharples milking machine contained on an average three to ten times as many bacteria as that of scrupulously careful hand milking, the counts ranging from 5,000 to 70,000 bacteria per c.c., as all precautions were being taken to produce the equivalent of "certified milk." During the three succeeding months of the test, by the aid of improved methods of washing, sterilizing, and manipulating the machine, together with the beneficial influence of the cold winter weather, far better results were obtained from the milking machine as to purity, although even here the hand-produced milk contained as a rule less than one-third the total bacteria. As the warmer weather of the summer of 1913 advanced, the milking machine again

showed much greater difficulty in producing pure milk than by good careful hand milking. All samples of these tests were taken from the cans immediately after the straining of the milk. In all cases it was found that when the rubber tubing was new and perfectly smooth, the machine-produced milk ranged very well with hand-produced milk; but as soon as the surface of the rubber showed any wear, the bacterial count immediately rose from three to ten times the former count, owing to the impossibility to thoroughly cleanse the rubber surface from adhering milk. In either hand milking or machine milking the purity of the milk is dependent on the following factors:

- (1) The cleanliness of the cows.
- (2) The purity of the air in the barn.
- (3) Careful milking to eliminate contamination.
- (4) Thorough washing and sterilizing of the utensils which come in contact with the milk at any period of its handling to the consumer.

The sterilizing of the milking machine was studied carefully. No figures sufficiently definite for publication were acquired. Roughly speaking, however, it is safe to say that rinsing the machine with cold and afterwards with lukewarm water will produce a bacterial count in the milk from 200 to 500 times as great as good careful hand milking, whereas the careful rinsing in cold and then hot water containing a good washing soda, and this followed by a thorough cleansing with the brushes provided, the steam sterilizing of all metal parts, and the sterilization of all the rubber parts in a 10 per cent salt solution, 5 per cent limewater solution, or $2\frac{1}{2}$ per cent formalin solution will give far more satisfactory results, and if other precautions are taken the bacterial count should not range above five or six times that of careful hand milking.

PATHOLOGICAL EFFECT OF MACHINE ON COWS

No ill-effects whatever on the cows' teats resulted from the use of the milking machine. After the machine commenced in the test a case of what appeared to be contagious garget was noticed. This rapidly disappeared and the cow came back to nearly her normal flow. Several other cases appeared shortly after, but, although the best pathologists were consulted regarding this matter, and the milk was studied carefully bacteriologically, yet, unfortunately, no organisms were isolated. It would appear, however, that this was a form of contagious garget, and could in no way be charged to the machine. The great disadvantage of any milking machine in a herd where contagious garget prevails is not that the machine induces this trouble in any sense, but is due to the fact that the machine may be spreading this trouble for one to two milkings before any thickness is noted either in the udder or in the milk taken from the same. A careful intelligent hand milker, on the other hand, would probably notice this at once, with the result that in the

future this cow, until cured, would be milked last and would probably be isolated from the other cows, her milk being also kept separate. This is an unfortunate fault of mechanical milking, but can be quite largely overcome by the careful observation of the man operating the machine.

PRESENT EXPERIMENTS WITH MILKING MACHINES

In October 1st, 1914, a new series of experiments was started, comparing good hand milking against the Burrell-Lawrence-Kennedy milker and the Sharples machine. In addition to these two machines three newer models, namely, the *Omega*, the *Empire*, and the *Lister* milking machines, are also installed, for comparative purposes. The first year of this second series of experiments with milking machines is for the comparison of the various machines with each other and with good hand milking. As yet, only eight of the experimental periods out of a total of twelve have been completed, and it would be unwise to give these data without the more conclusive duplication in the latter part of the experiment.

THE DIVISION OF HORTICULTURE

VEGETABLE GARDENING

BY M. B. DAVIS, B.S.A., ASSISTANT TO DOMINION HORTICULTURIST

AMONG the outstanding new features of the experimental work of the Horticultural Division, is the "Skinner System of Irrigation" which is just nearing completion.

This system is an overhead method of irrigating and is one that is being largely used by market gardeners in the United States. The whole area devoted to the growing of vegetables in this Division has had this system of irrigation installed this season. The area comprises some seven acres

so that a reliable test as to its merits is anticipated. As the installation was not completed until just recently it will be impossible to carry on any extensive experiments along this line this present season, but a few experiments in irrigation and non-irrigation are under test at present. Another year more space can be devoted to this line of work. At present it is impossible to give the exact cost of installing the system, but this information will be available at an early date.

POTATO EXPERIMENTS

Besides the variety testing of potatoes, experiments with potatoes are being conducted as follows:—

1. Comparison of the yield of Ottawa grown seed potatoes with the yield from the same varieties grown at the Experimental Farm at Fredericton. To date, the Fredericton seed, which was originally from the same source, is showing up to much the better advantage.
2. In an endeavour to grow seed of good vitality at Ottawa, a plot has been set aside which was mulched with

straw before the plants showed through the ground. This straw mulch is about four inches deep after settling, and it is thought that this mulch will so regulate the moisture condition in the soil as to prevent the tubers from reaching too early a maturity, which is considered the reason for the poor vitality of Ottawa seed.

3. In further connection with the growing of seed potatoes, different dates of planting the tubers for seed purposes are being tried out. Plantings as late as July 10th were made. The seed from these plots planted at different dates will be tested next year as to vitality and productiveness.

PLANT BREEDING WORK

BY A. J. LOGSDAIL, B.S.A., ASSISTANT TO DOMINION HORTICULTURIST

THE plant breeding work now being undertaken in the Horticultural Division consists chiefly in isolating and selecting the new hybrid types of early sweet corn. The crosses were made in 1913-14; the progeny of these crosses are now showing their general characteristics.

A number of crosses previously made with melons with the object of combining the qualities of size, firmness, productivity and sweetness in a suitable melon for greenhouse or frame culture are now fruiting. Amongst the progeny there have been a number of very promising seedlings, and interesting information has been secured on the influence of certain varieties as parent plants.

The crosses made in strawberries between our native species and several of the best of our commercial

varieties are now growing under field conditions, and give promise of something good, though considerable variation is evident.

The breeding work in peas, beans, and tomatoes consists chiefly in pure line and individual plant selections. A good season so far gives indications of very heavy yields from the pea strains. The late frosts in May retarded the tomatoes, but satisfactory weather since has greatly improved the appearance of this crop.

Some scientific work on colour inheritance is being carried on with Petunias and sweet peas. It is hoped from this work to obtain some instructive data regarding the definite or indefinite potentiality of male and female parent stock in influencing the character of their progeny.

ORNAMENTAL GARDENING

BY F. E. BUCK, B.S.A., ASSISTANT TO DOMINION HORTICULTURIST

DURING the winter of 1914-15, many of the half hardy plants, including the Hybrid Tea Roses, suffered considerably from winter killing. At the present time, however, very little of the loss due to this injury is noticeable on the ornamental grounds and in the test plots at the Central Farm. New importations of roses were made in the spring to fill all vacancies in the

rose garden, and there was a fine show of bloom during the month of June; many of the newer Hybrid Teas continued to bloom during the early summer, and will give a second display during August and September. Amongst the new importations are several varieties which are seen in Canada for the first time this year.

Amongst the large collection of

from three hundred to four hundred varieties of annual flowers which have been tested at the Farm during the past few years, the practice has been continued this year, as hitherto, of including about two dozen varieties of "new or little-known" flowers which have not hitherto been grown in Canada. A dozen plants of each of the several hundred varieties of annuals are grown and during the months of July and August they make a very interesting and attractive display of colour in the test plots.

One hundred and fifty varieties of the best sweet peas are under test

again this year; in addition to the varietal test of sweet peas, several experiments in the way of cultural methods and methods of training to different kinds of wire, are being tried out.

One hundred of the best China Asters from all the leading growers are also under test, together with several hundred varieties of Gladioli, including the newer introductions, as well as representative collections of Cannas, Geraniums, Dahlias, and groups of somewhat similar important plants grown as annuals.

THE DIVISION OF CEREAL HUSBANDRY

HARVESTING THE EXPERIMENTAL PLOTS

BY G. G. MOE, B.S.A., ASSISTANT TO THE DOMINION CEREALIST

THE present season has up to date been a very favourable one for the growth of cereals on the Experimental plots at Ottawa. The cool weather with scattered showers has encouraged a heavy growth of straw, and, if the proper weather prevails until time of cutting, a heavy yield of grain should be harvested.

The present time is an opportune one to draw attention to the methods employed at the harvest season in maintaining the purity of the various varieties and strains of grain. With hundreds of different strains under test and observation, varying from the plot not over a square yard in size, containing the progeny of a single plant, to the large sixtieth acre plot with which the final determination is made as to the value of a variety or strain it will be clearly seen that rigid precautions must be observed in order to maintain the absolute purity of the selections.

"Rogueing" is recognized by experimentalists as an essential in keeping varieties distinct, and is done between the time of heading out and the time of cutting. At this

period it is comparatively easy to observe differences in the shape of heads, the degree of beardedness, the absence or presence of down on the chaff, the difference in colour of glumes, the degree of maturity and other characters which aid the experimentalist in purging his strains of variations and foreign varieties.

At time of cutting, all broken and lodged heads are removed from the paths. The grain is cut with a cradle, alternate plots being cut if the maturity of the varieties permit. This leaves a standing plot between each plot harvested, which prevents any chance of cut heads getting into the next plot. The grain is stooked at alternate ends of the plots, which minimizes the danger of heavy winds sweeping two or more plots together. Large sheets which hold the product of one plot are used in conveying the grain to the thresher.

To many the actual problem of threshing presents the most serious difficulties. With hundreds of plots to thresh it is essential that work must proceed quickly, consequently a mill has to be used, to the innermost parts of which access is easy,

and from which all unnecessary cracks and corners have been eliminated. The ordinary threshing machine has proven itself too cumbersome and difficult to clean to be of effective use in threshing plots.

The thresher now in use is one devised by the Dominion cerealist, Dr. Saunders. While of a smaller type than the ordinary mills, it combines ease of cleaning with effective threshing. The interior part can be quickly removed leaving only the shell of the mill. The work of cleaning is facilitated by an electric blower to which a long rubber pipe is attached somewhat like a hose, which enables a strong current of air to be directed into any part of the mill, thus dislodging any stray kernels which may have escaped the brooms of the cleaners.

For the very small multiplying plots, a still more open mill is used. This practically consists of a cylinder, a sieve and a box, the grain and straw falling on to the sieve which vibrates back and forth making a separation of grain and chaff from the straw. The chaff is removed from the grain by means of another machine called an aspirator, which is so constructed that the grain falls downwards over a series of ledges, while a continuous draught of air passing upwards through the falling grain sucks all the chaff and light material upward and over into a large hopper. This machine makes a thorough separation with no danger whatever of any kernels of grain lodging in any part to contaminate the next lot of grain that is passed through.

THE DIVISION OF POULTRY HUSBANDRY

PROGRESSIVE OPERATIONS

BY F. C. ELFORD, DOMINION POULTRYMAN

THE Poultry Division of the Experimental Farm is making considerable improvement and addition to the buildings, equipment and stock on the central plant at Ottawa and also at the various branch farms and experimental stations throughout the Dominion.

At the Central Experimental Farm the old poultry houses are being demolished. These houses have been in existence for about twenty-five years and for a considerable time have been out of date. They also stood in the way of other buildings that were needed and interfered with the general rearrangement of the plant that has been contemplated. The new administration building will not be built this year but temporary offices have been arranged in the store house that was erected a year ago. Besides several new types of colony houses, three permanent

"farm poultry houses" holding one hundred hens each are being built on the central plant, and a house sixty feet long by fourteen wide for the ducks and geese is being erected on the turkey and waterfowl plant.

Plans of these houses are available for those wishing to build anything of a like nature.

At the majority of the branch farms and experimental stations complete equipment is being established this summer. This equipment will include what is known as the administration building in which the incubators, feed, storage and office are located; brooder house suitable for indoor hovers and large room heaters; permanent poultry house or houses designed for the use of a farmer who keeps a flock of one hundred hens; various styles of colony houses for growing stock and laying hens.

The stock at the Central Experi-

mental Farm has been materially increased during the last year. Formerly, between two and three hundred laying hens were kept, while this winter it is expected that seven or eight hundred will be accommodated. At the branch farms there will be accommodation for about three hundred laying hens. Some of the farms keep only one breed, while others, depending upon local conditions, may have two or three different varieties. At the Central Farm in addition to work with ordinary fowl, experiments are being carried on with turkeys, geese, ducks and guinea fowl and at several of the branch farms, particularly in the prairie provinces and high parts of British Columbia, turkeys are receiving considerable attention. At several of these farms quite large flocks of young turkeys are being handled this year and so far no serious trouble has been reported while at Ottawa the turkey crop up to date promises to be highly satisfactory.

During the past two years, experimental work has been carried on with various styles of poultry house and a bulletin will be issued this fall giving the results of these experiments, also plans and particulars of

the houses that have proven most satisfactory.

Numerous experiments of a different nature have been in progress. These have included the relative value of eggs or day old chicks for shipping, express or parcel post; shipping of eggs in the various stages of incubation; marketing of stock, especially green ducks and broilers; the best means of catering to a new-laid egg trade; how best to produce the stuff and how best to put it into the consumers' hands; experiments in incubation, fertility, brooding, rearing, feeds and feeding, mortality in chicks and ducklings, and many others, all of which will be reported.

Practically no stock or eggs are sold from the Central Farm as the surplus is supplied to the branch farms and experimental stations from which, stock and eggs are sold at reasonable rates to the farmers in the community as long as the supply lasts.

The poultry division of the experimental farms system is fast getting into a position where it will be able to give information gained by practical experience on all questions of production.

THE DIVISION OF CHEMISTRY

SEAWEED AS A FERTILIZER

BY FRANK T. SHUTT, M.A., DOMINION CHEMIST

THE European war has, for the time being, cut off from the Canadian market, and indeed from the markets of the world, the supply of potash furnished by the Stassfurt mines. These mines, situated in Germany, have been for many years the sole source of the potash compounds used for fertilizing purposes.

A consideration of the various home sources of potash that may be employed to supply the present

deficiency has been attempted in Circular No. 7 (Experimental Farm Series), copies of which are still available. Prominent among these sources are the seaweeds that abound on both the Atlantic and Pacific seaboard. Seaweeds are essentially a potassic fertilizer, but they also possess notable percentages of nitrogen, in addition to small amounts of phosphoric acid and other elements of plant food. Hence to a certain degree they constitute a com-

plete fertilizer. Further their manurial value is enhanced by their ready decomposition in the soil. In the fresh condition they may be applied directly to the soil and excellent results obtained, for their plant food constituents are readily made available for crop use.

But the watery character of the fresh seaweed limits its use to those farmers living near the shore, for the freight charges, if it were taken to any distance inland, would exceed the value of the material. Fresh seaweed contains from 65 to 85 per cent of water.

To ascertain if this useless water can be economically got rid of, and a fertilizer prepared in the form of a dry powder suitable for broadcasting or application in the drill, experiments were instituted some two months ago at Clarke's Harbour on the south coast of western Nova Scotia, using for the purpose of the experiment the Dog-fish Reduction

Works situated at this place. An abundance of the raw material exists in the vicinity of the works, making this a favourable locality for the experiment. The investigation is still in progress and results as to cost of production per ton of the prepared fertilizer are not yet available. Many difficulties have been met with both in drying and grinding, but these for the most part have been successfully met. Special machinery, though of a simple character, had to be devised and modifications in the several processes involved from time to time had to be made. But the work has sufficiently advanced to permit the statement that the outlook for the successful solution of the problem is most promising. A considerable quantity of the finished product has already been obtained, and its analysis as well as its physical condition go to show that it will prove a valuable manure, rich in potash and nitrogen.

THE ENTOMOLOGICAL BRANCH

TWO SERIOUS FRUIT PESTS NEW TO CANADA

BY C. GORDON HEWITT, D.Sc., DOMINION ENTOMOLOGIST

DURING the month of April, 1915, Mr. R. C. Treherne, Field officer in charge of the Dominion entomological laboratory at Agassiz, B.C., reported the discovery in British Columbia of two new serious insect pests of fruit whose establishment in Canada has not hitherto been recorded. Early in the month Mr. Treherne discovered an infestation of the Currant Gall Mite (*Eriophyes ribis* Nalepa) a European pest introduced into Canada no doubt from Great Britain, and at the end of the month he received specimens of the Pear Thrips (*Taeniothrips pyri* Daniel) from a locality near Victoria, B.C., an immediate examination of which dis-

closed an infestation of this insect.

These discoveries do not necessarily imply a very recent introduction of the two pests into Canada, but rather point to the importance of the presence in the different provinces of trained officers who are constantly on the look-out for an unusual insect which might otherwise be overlooked.

In the case of both these pests, which will briefly be described, action was immediately taken and is to be continued by the Provincial Department of Agriculture to restrict and control the infestations, and the control of the pests will be further investigated by the Entomological Branch.

THE CURRANT GALL MITE
(*Eriophyes ribis* Nalepa)

Although our inspectors have occasionally found currant bushes from Great Britain infested with this mite, and showing the characteristic abnormally swollen buds or "big buds," it has never been found, so far



FIG. 1. SHOOTS OF BLACK CURRANT

Left—normal uninjured shoot; right—buds infested with mites causing "big bud." (After Theobald.)

as our records show, established in Canada prior to its recent discovery in an apparently restricted area near Duncans, B.C.

In England this mite is one of the most serious fruit pests, and the damage it has done has been so great that the growing of black currants has been rendered impossible in some districts. Its rapid spread during recent years has been due to the fact that no reliable method of eradication has been discovered.

The mite responsible for this injury is related to the Pear Leaf Blister Mite. It can scarcely be seen with

the naked eye as it hardly measures one-hundredth of an inch. These minute mites (Fig. 2) occur in enormous numbers in the buds, and their injuries to the tender undeveloped leaves cause the leaf tissues to swell with the consequent swelling of the buds by which the presence of the mite can usually be determined (Fig. 1). When badly infested the buds do not produce leaves but dry up and become brown. If only a few mites be present in the bud dwarfed shoots and leaves may be produced.

During the winter the mites shelter in the buds. In the spring, under English conditions, a migration of mites from infested buds commences about the middle of April and continues until the middle of June, and during this time the mites may be found on the green shoots of the plant, and especially near the newly forming buds. These adults lay eggs in the buds in the autumn and from these eggs the new generation hatches. Eggs may be found, however, in the buds the whole year round, but they are fewer in December and January.

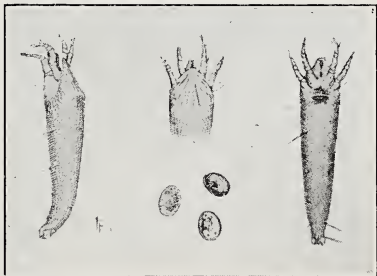


FIG. 2. CURRANT GALL MITES

Eriophyes ribis, enlarged 170 times. (After Lewis.)

The chief means of spread is by the movement of bushes from an infested plantation, or by the use of diseased cuttings. The swollen buds are often regarded as indicating a vigorous plant. The mites are spread by the wind, on one's clothes and on

insects, especially on native and hive bees which visit the infested bushes during the blossom period.

At present no means of eradication is known. The following measures will help to check the increase of the pest:

Clean stock. Only clean stock obtained from uninfested localities should be planted. Cuttings from infested plants should be rejected. Diseased bushes should be taken up and burnt if possible; additional safety would be secured by dressing the soil with lime. Severe pruning of infested shoots has proved of value.

Disinfection of cuttings. According to Pickering cuttings can be disinfected by immersing them in water at a temperature of 115° F. for ten minutes before planting.

Use of insecticides. No satisfactory insecticide has been found up to the present. Collinge reported good results from dusting the bushes with a mixture of one part of finely ground unslaked lime and two parts of flowers of sulphur. The mixture should be dusted on the trees while they are wet, beginning in the spring and repeating the dusting about three times at intervals of a fortnight. Damage to the leaves by scorching and to new plants from this treatment has been reported. Theobald reports a case where the mite was said to have been kept in check by repeated sprayings with soft soap and quassia, starting when the buds open and repeating every two weeks until the summer. It is not unlikely that spraying with the summer strength of lime-sulphur at fortnightly intervals from the time the buds begin to open would prove a useful measure.

At the present time, however, it is unwise to stop short of taking the most drastic steps possible to eradicate the pest on its first appearance, as its permanent establishment would mean a serious addition to the pests against which we are compelled at present to take action from season to season.

Suspicious cases of the Currant Bud mite of "big bud" in currants should be submitted immediately for examination.

THE PEAR THRIPS

(*Taeniothrips pyri* Daniel.)

The discovery of this insect near Victoria, B.C., is an important one, scientifically and practically. On the Pacific coast it has not been recorded previously beyond the central counties of California adjacent to San Francisco Bay, in which region it was first recorded as an injurious insect in 1904. In the infested counties it is estimated to cause an annual loss of over ten million dollars, the chief economic loss being experienced in prune orchards. Until 1911 the pest was not positively known outside California, but in the spring of that year it was found in considerable numbers injuring pear blossoms along the Hudson river in the State of New York. In 1912 it was found on pear blossoms in Pennsylvania.

The occurrence of this species in Europe is taken to support the theory that it is of European origin; but on the other hand the Orient has been suggested as its original home. Whatever may have been its native land the important fact for us is that at the present time the pear thrips constitutes "one of the most important insect pests with which growers of deciduous fruits in the San Francisco Bay region and adjoining counties have to contend," to quote the words of a recent bulletin of the United States Department of Agriculture. And the fact that the insect is injurious in the State of New York is strong evidence of its ability to become a serious pest in British Columbia if steps are not taken to control the infestation in its infancy.

Injury. The damage from this insect is chiefly confined to deciduous fruits, particularly pear, prune, plum, cherry and peaches. Its injuries are caused by the adult and larval



FIG. 3. BRANCH OF PEAR SHOWING "BLIGHTING" OF BLOSSOM CLUSTERS DUE TO WORK OF PEAR THRIPS. (AFTER PARROTT.)

thrips feeding on the buds, flowers, fruit and leaves, but particularly the buds of flowers, and by the deposition of the eggs. The chief injury to pears results in a blighting of the blossoms caused by the adults feeding in the developing bud clusters and early blossoms (Fig. 3); in the case of prunes the setting or development of the fruit is affected.

Nature and Habits of Insect. The term "Thrips" is used for a number of insects which are not true thrips. This pest is a true thrips and the adults are minute,

entirely destroyed. The eggs are laid beneath the epidermis of the fruit, leaf stems and young fruit about the time the trees are coming into full bloom, and the larvæ hatch a few days later. They become full-grown in about a fortnight, and then drop, or are blown off the trees on to the ground, into which they penetrate to the depth of a few inches and construct a small pupal cell, where they remain until they emerge as adults in the following spring. There is, therefore, only a single brood and the insects spend about two months

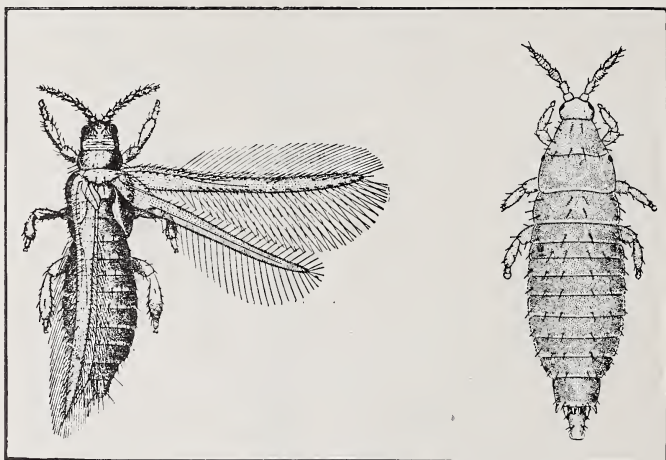


FIG. 4. PEAR THRIPS, *Taeniothrips pyri*.

Adult on left; larva on right. (After Moulton, U. S. Dept. Agriculture)

slender, dark brown insects, measuring one-twentieth of an inch in length (Fig. 4). The wings are fringe-like and carried flat along the back. Owing to the possession of peculiar jaws it feeds by rasping the plant tissues and not by biting or chewing. The winged adults leave their hibernating quarters in the ground very early in the spring and migrate to the fruit trees. After entering the swollen fruit buds they feed upon the very tender developing leaves and blossoms and if the insects are abundant the buds may be en-

of the year on the trees and about ten months in the ground.

Control. This insect is most difficult to control owing largely to the rapidity with which it commits its injuries and the shortness of the period during which it is destructive and most accessible. The most effectual means of control is spraying. This must be carried out during the period when the buds are bursting and until they are entirely open. Parrott has found that in the state of New York the most promising spray mixtures are nicotine preparations in

conjunction with kerosene emulsion or soap, and he gives the following formula:

Black Leaf 40 (40 per cent. nicotine extract).....	$\frac{1}{2}$ to $\frac{3}{4}$ pint
Water.....	100 gallons
Soap (whale oil).....	2 to 5 lb.
or	
Kerosene emulsion.....	3 gallons.

The State Horticultural Commission of California recommends a distillate oil emulsion in combination with nicotine. The distillate oil can be purchased or made at home. The formula recommended is made up of 3 per cent distillate oil emulsion, to which is added 1 to 12-3 per cent Black Leaf 40 at the rate of one part to 1500 to 2000 parts of the spray mixture. The distillate oil stock emulsion is made as follows:

Hot water.....	12 gallons
Fish oil or whale oil soap (it must be genuine).....	30 lb.
Distillate oil (raw) 30° to 34° Beaumé.....	20 gallons

This stock solution cannot be made without thorough agitation and high pressure, and for this purpose a power sprayer is indispensable. Pour the boiling hot water into the spray tank and with the agitator running full speed immediately add the soap. When it is thoroughly dissolved slowly pour in the oil, keeping the mixture well agitated all the time. When it is all well mixed pump out the resulting stock emulsion, through the nozzles at a pressure of not less than 175 lb. into the storage tank. To make a 3 per cent solution it is necessary to use $5\frac{1}{2}$ gallons of this stock emulsion to

each 100 gallons of water, or spray solution, if nicotine is also added. To make up the spray solution pour the required amount of stock solution into the tank, having started the agitator first, and, keeping the agitator running continuously, add the water. If nicotine is added it should be diluted first and not added until the oil emulsion has been made up to almost full strength.

Three applications of the spray are considered necessary by Foster and Jones (U. S. Dept. Agriculture, Bur. Entomology Circ. No. 131) in a badly infested orchard the first year.

The spray is applied at the following times:

First. When the earliest buds are separating slightly at the tips.

Second. Four to ten days after the first; on pears just as the earliest cluster buds are shown; on prunes when the tips of the petals first begin to show. Both these applications are important and *the spray should be directed on to the ends of the buds from the nozzles held close to the clusters.*

Third. (For the Thrips larvæ) When most of the petals are falling.

Deep fall ploughing and cross ploughing followed by harrowing has also proved valuable where it can be carried out. This operation destroys the hibernating quarters in the soil.

The discovery of these two pests emphasizes the importance of constant vigilance and immediate inquiry whenever any unusual trouble or insect is discovered.

No other human occupation opens so wide a field for the profitable and agreeable combination of labour with cultivated thought as agriculture. Population must increase rapidly, more rapidly than in former times, and ere long the most valuable of all arts will be the art of deriving subsistence from the smallest area of soil. No community whose every member possesses this art can ever be the victim of oppression in any of its forms. Such community will alike be independent of crowned kings, money kings, and land kings.—*Abraham Lincoln.*

THE FRUIT BRANCH

THE MARKET PROBLEM

BY FRED H. GRINDLEY, B.S.A., ASSISTANT TO THE FRUIT COMMISSIONER

THERE is a very natural uncertainty existing among the fruit growers at present as to what will be the state of the markets during the heavy shipping period in the late summer and autumn. The general feeling is rather a pessimistic one. The European war seems to have impressed fruit shippers with the idea that the consuming public will eat very little fruit, that only staple necessities will be in great demand and that consequently the possibility of remunerative returns is a small one.

As a matter of fact those who are best in a position to hazard a forecast upon these matters strongly oppose the idea of any such situation arising. Trade Commissioners and large fruit importers in England and Scotland are of the opinion that a good demand at fair prices will prevail for fruit of sound and reliable quality. This assumption is based, first, upon the fact that there has been a moderate demand in England for the early and more expensive fruits, which are not as much a necessity of diet as apples; and, secondly, because there is now in England plenty of available employment for the labouring classes at good wages.

Fruit growers in Canada have already marketed large quantities of small fruits, and prices have been very satisfactory. It may, therefore, be assumed that our home markets will offer an equal, and, pro-

bably, a greater demand for the heavier shipments of apples, peaches and pears towards the end of the summer. There is also the promise of a large grain crop in the west, which will tend to bring about a free circulation of money. Thus we have in Canada the same two conditions upon which the optimism of authorities in Great Britain is based.

So much for supply and demand. The most obvious difficulty lies in the uncertainty of ocean transportation facilities being satisfactory. In 1814 there was, at times, an extreme scarcity of space on vessels plying between Canadian ports and Great Britain, with the result that many of the early varieties of apples could not be exported and were, in some instances, left to waste in the orchards. As long as the war continues that danger will be present, and will be the one to be most considered. So far as demand is concerned, or the purchasing power of the public, there is no indication of any reduction taking place. The average citizen has passed the "panic" stage and is not as much inclined to restrict or limit his purchases as he was at the first outbreak of war.

This branch will keep in touch with the large shipping companies and advise fruit shippers, as frequently as possible, regarding the dates of sailings and the space available for cargo.

THE DAIRY AND COLD STORAGE BRANCH

NOTES

BY J. A. RUDDICK, COMMISSIONER

THERE has been considerable comment in recent years respecting the importation of butter from New Zealand and Australia into Canada. It would appear, however, that the tables are being turned, as I have just been advised that the steamer Makura, which sailed for New Zealand and Australia on the 7th instant, carried approximately 4,000 boxes of butter from creameries in the prairie provinces, and that orders have been received by Vancouver merchants for a further shipment of 6,000 boxes by the next steamer. It seems quite likely that in the near future the output of butter from the creameries in Alberta, Saskatchewan and Manitoba will be more than sufficient to supply all western demands and provide a substantial surplus for export. The maximum importation of butter (7,989,269 pounds) was during the fiscal year 1912-13.

The Brome creamery was destroyed by fire on Sunday, July 11th. At the time of writing no particulars had been received at the department as to how the fire originated. The Brome creamery was acquired by

the Department of Agriculture in the fall of 1911. During the following year a new building was erected and equipped with all modern appliances. It has been operated by the Department as a model creamery, with facilities for conducting experiments and investigations.

A series of dairy meetings have recently been held at various points on Prince Edward Island. These were arranged by Mr. Harvey A. Mitchell, representative of the Dairy and Cold Storage Branch for the Maritime Provinces, who was assisted by Mr. George H. Barr, Chief of the Dairy Division, besides other officials of the federal and provincial Departments of Agriculture. Some of these meetings constituted picnics of the patrons of creameries. The attendance was very good throughout, numbering from 200 up to 3000 people. In these meetings occasion was taken to explain to patrons the modern system of grading cream. From the interest taken, it was expected that a number of creamery companies will establish rules and standards for cream to be submitted to patrons at their next annual meetings.

During the six months ending June 30th, 1915, Great Britain imported 6,393,100 cwt. of wheat from Canada valued at \$4,377,436 against 9,449,229 cwt. valued at \$3,793,624 in the corresponding period of 1914.

THE LIVE STOCK BRANCH

APPOINTMENTS UNDER THE NEW MARKETS POLICY

IN accordance with the new markets policy that has been adopted by the Live Stock Branch, as detailed in the July number of THE AGRICULTURAL GAZETTE, Mr. A. P. Westervelt, formerly chief of the live stock branch of the Ontario Department of Agriculture and secretary-manager of the Ontario winter fair, has been appointed in connection with the organization of the intelligence department of the work. It will be his duty to gather and assimilate information regarding markets with a view of providing a reliable service to the producer.

There has also been appointed to a responsible position in connection with this propaganda, Mr. George H. Pepper of Toronto. Mr. Pepper is an experienced and successful business man and, as well, one of the oldest and most widely known horsemen of America. Within the last year or two he has turned his energy and ability to an analysis of the conditions affecting Canada's agricultural trade, and has given much thought and study to the problems connected with marketing and transportation, and to this latter question he will give special attention.

THE HEALTH OF ANIMALS BRANCH

PROHIBITORY ORDER AMENDED

THE prohibition of the importation into Canada of animals, hides, hay and other products made by Order of the 9th May, 1915, under the provisions of "The Animal Contagious Diseases Act" is hereby removed, so far as concerns any of the following states, viz.: Minnesota, North Dakota, South Dakota, Montana, Washington, Oregon, Idaho, Wyoming, Nebraska, Colorado, Utah, Nevada, California, Arizona, New Mexico, Oklahoma, and Texas.

Animals and their products; also hay and straw, may be imported into Canada from any of the aforementioned States, provided they are accompanied by the affidavit of the owner or shipper that they are the product of one of the above men-

tioned States, and have not been unloaded in any State other than one of the above mentioned States. In the case of live animals, the usual requirements of the Department as to quarantine, health certificates, or mallein or tuberculin tests must be observed.

The operation of the said Order of the 9th May, 1915, as amended, is hereby extended for one month from the 9th August, 1915.

This amending Order shall be effective only on and after the 2nd day of August next.

Dated at Ottawa, this twenty-second day of July, 1915.

(Sgd.) GEO. F. O'HALLORAN,
Deputy Minister of Agriculture.

TUBERCULIN TESTING AT SASKATOON

SASKATOON is the first city in Canada to have had the assistance of the Federal Government in the control of bovine tuberculosis in the herds furnishing its milk supply.

Federal aid was given under the new tuberculosis regulations adopted last year, by which any city or town with a population of 5,000 or over, and whose dairies are up to a certain standard of sanitation, may have all dairy cows tested free of charge, and the reactors removed, with compensation to the owners.

The first test of Saskatoon's dairy cows has now been completed, and some interesting facts ascertained. One hundred and one herds were tested, comprising one thousand three hundred and eighty-three cattle. Seventy-four herds were found to have no reactors to the test, and in the remaining twenty-seven herds, eighty-six reactors were found. This gave a percentage of six decimal twenty-two, which may be considered a low percentage for this class of cattle. Almost half the total number of reactors were found in three herds, the remainder being scattered among the others.

Reacting cattle have been dealt with as provided by the regulations, the owner having the choice of fattening them for beef, of having them immediately slaughtered, or of retaining them indefinitely in the herd, in the latter case not selling any but pasteurized milk. None of the owners chose the latter proposition, as all were desirous of cleaning up their herds as soon as possible. Fifty-seven reactors are now being prepared for the butcher, and twenty-nine have already been slaughtered.

A careful post mortem inspection was made of each animal as it was slaughtered, and the veterinary in-

spector, guided by the same rules as govern the inspectors in abattoirs under federal inspection, decided whether the carcass was fit for food or not. In every reactor slaughtered there was found evidence of disease. Nine cows were so badly diseased that their carcasses were condemned. In the other twenty the evidence of disease was slight, and confined to parts that are not eaten, so that the carcass was passed for food.

Under the regulations the owner receives whatever sum of money is realized by the sale of the carcass, unless this sum, added to the compensation, exceeds the legal valuation of the animal. This salvage, in the case of the twenty-nine cows destroyed amounted to \$21.16 per head, the compensation to \$20.00, making a total of \$41.16. The small amount of salvage realized is disappointing, but it must be remembered that these cows were not prepared for the butcher, and that nine of them realized only the price of the hide. The remaining fifty-seven when prepared for the butcher may be expected to bring a better price.

It is satisfactory to note the large number of healthy herds, about 75 per cent of those tested. While this should not be taken as an indication of what may be found at other places, it shows that, in some localities at any rate, the extent of bovine tuberculosis is not so great as to render its eradication impossible.

The next step to be taken in dealing with these herds is to protect them against the purchase of infected cows. Each cow purchased by one of these dairymen will be submitted to the test, and the herds will be retested from time to time as may be necessary.

On the completion of the work of testing, the city council of Saskatoon passed the following resolution:—

“That this city very much appreciates the prompt and effective response to their application to have all the cattle in the vicinity of Saskatoon tested for tuberculosis and the excellent work carried out by the assistants of the Veterinary Director General's Department.”

TABULATED STATEMENT

FIRST TEST, SASKATOON

Herds tested.....	101
Herd having reactors.....	27
Herd having no reactors.....	74
Number of cattle tested.....	1,383
Number of reactors.....	86
Percentage of reactors.....	6.22
Reactors slaughtered.....	29
Lesions of tuberculosis found in..	29
Condemned at post mortem.....	9
Passed for food.....	20
Reactors feeding for beef.....	57

FLY TIME

FAST numbers of flies breed wherever cattle and horses are confined. Stockyards and stables, in spite of precautions, and even when extra care is taken, are generally infested with these pests.

Abattoirs, being usually quite close to the stockyards, would be full of flies during the summer months unless screens and other methods were in use to limit their number. At one of the abattoirs under government inspection the inspector in

charge kept a record of the flies caught in the fly traps in use there. These fly traps are large cylindrical affairs made of wire gauze, baited with stale beer or other delicacy, and are placed outside the doors as well as inside the building.

During the months of May, June, July, and August, 1914, 783 quarts of flies were captured, weighing 1,031 lb. As there were found to be 9,600 flies to one quart, the total number of flies caught was 7,545,600.

A suggestion having been made that farmers' institutes in British Columbia should create a fund for the purchase of machine guns, the Superintendent of Institutes, Mr. Wm. E. Scott, issued a circular to all the institutes of the province pointing out that if each member of an institute would subscribe so small a sum as fifty cents, it would be possible to supply five of these guns. Every secretary was requested to call an emergency meeting, if the executive thought proper, as speedily as possible with a view of taking up subscriptions.

PART II

Provincial Departments of Agriculture

IMPROVEMENT OF CREAMERY BUTTER

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

BUTTER and cheese have been produced in Prince Edward Island for over one hundred and fifty years, but the first cheese factory was established in 1883, and the first creamery in 1897. Subsequently cheese factories were established in Lot 49, Central Bedeque, and at St. Eleanor's, Prince County. They ran for a few years but when Professor James W. Robertson, then Dairy Commissioner, visited the province in 1891 for the purpose of introducing co-operative dairying, St. Eleanor's was the only factory in operation. On June 22nd, 1892, the first cheese factory organized on the co-operative plan was opened at New Perth. It closed for the season on October 31st, having manufactured 66,089 pounds of cheese. The following year a number of factories were opened, all of which were operated on the same plan but under government management and inspection. In 1897 government operation was nearly given up, and, two years later, government inspection was dropped.

In order to secure a uniform make of butter and cheese throughout the province, and also to raise the quality of the output to the highest point of excellence obtainable, inspection and

instruction had to be provided, and at a meeting held in Charlottetown for that purpose on March 4th, 1899, the Prince Edward Island Dairy Association was organized. Under this Act an instructor was appointed whose duty it was to "enter the various cheese and butter factories in the province making cheese and butter for export, and to inspect the premises, apparatus and utensils, the quality of cheese or butter manufactured, and to examine the quality of the milk delivered at the factory by the various patrons, and to make a full report of his inspection with such recommendations as he might see fit to the president, manager, or secretary, of the respective factories, and also to the secretary-treasurer of the association."

To pay the salary of the instructor, the Federal Department of Agriculture agreed to make a grant of \$300 to the association, the Provincial Government a grant of \$300, and the association was empowered to levy an assessment on every factory making cheese or butter for export, the assessment to be made in proportion to the quantity of milk received at each factory during the year preceding the annual meeting. Mr. Fraser T. Morrow, of

Charlottetown, Prince Edward Island, at that time one of the most prominent cheese makers in the province, was appointed inspector, and has continued in that position ever since.

There are now about 46 cheese factories and creameries in operation in the province. Mr. Morrow visits these as frequently as possible, giving special attention to those in which the makers have had little experience, or who, for some reason or other, are having difficulties. He endeavours to see that the factory is kept in the best possible condition and that the cheese and butter are of the best possible quality. His instruction, however, is not confined to the makers. He endeavours to instruct the patrons as far as possible in the best methods of handling milk and cream, and endeavours to have the product received at the factory as good as possible. The Federal Department of Agriculture has also been co-operating in this respect. In the past years they have arranged for a dairy school at

Sussex, N.B., and paid the travelling expenses of makers from this province. In addition, the representative of the Dairy Division of the Dominion Department of Agriculture in this province, Mr. Harvey Mitchell, has distributed among the patrons of creameries the following rules for the care of cream:—

1. Skim only in a clean place, free from odours.
2. See that the separator and utensils are washed absolutely clean and scalded every time used.
3. Skim the milk as soon as possible after being drawn to ensure close skimming—adjust the separator to give a cream containing not less than 30 per cent butter-fat.
4. Cool the cream at once to 50 degrees or under, but in no case allow cream to freeze.
5. Do not mix cream with that of a previous skimming until cooled to 60 degrees or under, and stir well every time fresh cream is added.

There is still a lot to be done to improve the quality of Island butter, but most of this work has now to be done with the patrons of the creameries.

NOVA SCOTIA

BY W. A. MCKAY, DAIRY SUPERINTENDENT

FACTORY dairying along co-operative lines is still in its infancy in Nova Scotia, practically all the development having taken place in the last five or six years.

Previous to about 1908 whole milk creameries and cheese factories had been attempted in almost every part of the province, but only in a few cases with success. The province is rather sparsely settled, the cow population is limited, the roads for the most part run irregularly, the cows in general freshen in the spring, and the co-operative spirit had not been largely developed.

Fortunately, however, the cream-gathering creamery solved a number

of these problems, and this is the type of creamery which in the past five years has led to an increase in the factory butter production of Nova Scotia amounting to 36 per cent.

The first creamery started on this cream-gathering plan was the one at Scotsburn, a creamery which had been running for some six or seven years with annual deficits every year. Six years after this creamery was changed from a whole milk to a cream-gathering creamery the output increased nearly 2,000 per cent. Better still the type of cows was improved; individual farmers made larger returns from their cows, and the result has been an unqualified success.

The Nova Scotia Department of Agriculture, recognizing that the day had come for development and also feeling assured that the cream-gathering creamery would solve problems which had led to failure in previous years, organized a Dairy Division and appointed a dairy superintendent some three years ago. The result has been that ten new creameries have been organized since that time all on the same co-operative plan and all promising to make a decided success. Only in one or two sections has the local or whole milk creamery plan been adopted.

The following are some of the duties which the dairy superintendent with his assistants is endeavouring to accomplish:—

To give such assistance as is needed to the managers of creameries in order that they may manufacture the finest quality of butter.

To organize new companies, and to see that they are properly situated to cover the whole of the province in the most economical way, and to prevent as far as possible creameries from invading the territory of other creameries.

To see that the site and plans and specifications of each creamery erected are the best to serve the interests of each locality.

To keep a close check on all butter that is sold with special reference to controlling the quality.

To stimulate a higher production of milk per cow.

To do everything possible to further the dairy interests of the province.

The Nova Scotia Dairymen's Association was organized two years ago with the object to bring factory-men closer together to discuss their problems.

Dairy legislation was passed at the session of 1914. The principal clauses are as follows:—

Providing for bonuses to new factories under certain conditions.

Empowering the dairy superintendent to take over the management of any creamery in whole or in part as may be decided upon.

Empowering the Dairy Division to build demonstration creameries.

That all cream shall be paid for according to the Babcock test.

That all samples of cream shall be weighed for testing with the Babcock test.

That all cheese factories and creameries shall be registered after the first of May, 1915.

That refusal of registration may be based on unsanitary conditions or improper methods of manufacture.

That no cheese factory or creamery shall be built until the plans and specifications have been approved by the dairy superintendent.

The result is that all new creameries are in a satisfactory condition to manufacture a good quality of butter.

The cost of plants complete has ranged from \$4,000 to \$12,000.

In the development of this policy the Federal Department of Agriculture has co-operated splendidly with the Provincial Department of Agriculture, the officials holding joint meetings and doing all in their power to promote increased milk production and the better manufacture of cheese, butter and other dairy products.

A separate policy is being developed in Cape Breton, the Department building and operating the creameries for a term of years under certain conditions. One creamery is now in the second year of its existence and has fully justified its being started; another is being built this year, and if the policy works out right no doubt the whole Island will eventually be covered.

Cream grading has been started this year in one of these creameries which has been built by the Government, and if it continues to work as satisfactorily as it is doing at the present time it will be advocated

for all the creameries in the province next year.

Little trouble has been experienced so far from inferior quality of butter, as very little is exported.

The climate is ideal, nights cool, good water and good pasturage, but from the Department's standpoint quality is considered the first essential, and watched very closely, and, when any complaint comes in, a visit is made at once to the creamery and the trouble ferreted out.

The heartiest spirit of co-operation exists between the factorymen and all concerned, and it is on the continuance of this feature that it is hoped to develop the dairy business.

In the carrying out of this policy which is now yielding such splendid results the local Department of Agriculture has been materially assisted by an appropriation from the Federal Government made under THE AGRICULTURAL INSTRUCTION ACT.

NEW BRUNSWICK

BY J. B. DAGGETT, SECRETARY FOR AGRICULTURE

DEALERS in butter in New Brunswick have had much reason for complaint that the butter produced in this province was often poor in quality and especially lacked uniformity. There has been no system of inspection or means by which the poor butter maker could be marked and his butter recognized on the market. The good and careful butter makers, of whom we have many, have suffered because of these facts.

The Dairy Act of the Federal Government, which recently came into force, was very generally welcomed by those producing a good article of butter, and is generally opposed by the poor and careless maker. The officials in this province are earnestly endeavouring to enforce the law and they believe that good results will follow.

In 1906 there were forty-one creameries in operation in the province. These produced 967,203 pounds of butter during the year. In 1909 the creameries had been reduced to sixteen and the product had fallen off to 644,779. That was the "low water" mark in the dairy business in the province. There has been an increase each year until we now have twenty creameries, with an out-put last year of 1,090,501

pounds. The Department of Agriculture has adopted a new policy, discouraging the establishment of small creameries and advocating the large, central creamery, with cream routes, with the idea of remedying the conditions of the past and producing a better and uniform quality of butter. The farmers in Madawaska county have taken up the idea of amalgamation and several of their creameries have been abandoned and a large central creamery has been established at St. Hilaire. It will be in operation this year and we are watching the experiment with much interest. If it works out as well as it is hoped for, this policy will be generally adopted throughout the province and large creameries at central points, serving as large an area as possible, will be established. This Department has placed a dairy instructor and inspector in the territory served by the creamery in Madawaska county, and during the summer months all his time will be given to assisting and instructing the farmers in the proper method of producing and handling their milk and cream. Dairy superintendents now make regular visits during the producing season to all the creameries in the province, and are endeavouring to overcome many of the faults in butter production of the past.

QUEBEC

BY J. D. LECLAIR, GENERAL INSPECTOR OF CREAMERIES

THE Dairy School of St. Hyacinthe was established in 1893 by the Dairymen's Association of the province of Quebec. It was intended to take the place, as a permanent structure, of the travelling school of about the same kind which had been operating for some years previously.

By special understanding with the association, the management of the institution was at first assumed by Professor Jas. W. Robertson, who kept it during three years. As soon as the school was in good working order, the management of it was handed over to the Dairymen's Association.

For the last few years the school has been under the direction of the provincial Department of Agriculture, which has assumed the whole management.

One of the first objects of the school was to make an investigation into the condition of the cheese and butter industry in Quebec, to ascertain the distance between our producers and the best known producers in competitive countries.

The methods in use elsewhere were introduced and generalized in the province of Quebec, with the necessary modifications, only after their suitability to our local conditions had been carefully ascertained.

The St. Hyacinthe dairy school has never introduced and recommended a new method without first securing the opinion of Montreal dealers, based on the quality of the products obtained. Of course this mode of proceeding was necessarily slow, but it saved a great many false steps, and prevented too hasty or unfavourable impressions.

TEACHING PASTEURIZATION

Since 1907 the provincial dairy

school of St. Hyacinthe has officially recommended the pasteurization of cream as a necessary purifying process before this cream is manufactured into butter. Pasteurization checks the growth of undesirable germs and creates a more favourable medium for the action of lactic ferments called "pure culture ferments."

Butter makers following the short winter courses have been taught along these lines. They have seen the results attending this method; they have learned how to apply it and it is now very gratifying to us to see that pasteurization is applied in all new factories and introduced in a great many old ones.

QUALIFICATION OF MAKERS

As the value of the teaching given by the St. Hyacinthe dairy school became known among the public interested in the improvement of dairy produce, some guarantee of competence and skill in the makers was urgently asked, and measures were taken by the school to satisfy these very legitimate requirements.

The school has a board of examiners who are sitting almost continuously during the winter courses; the makers are submitted to a written and verbal examination and to a practical test regarding the testing of milk and cream. When these makers are doing practical work during the season, delegates are sent by this board to see them at work and to find out to what extent they apply the teachings of the school. The granting of the maker's diploma will depend upon this visit. If the practical work does not correspond to the result of the written examination, or vice versa, the maker does not receive his diploma. An unsuccessful applicant

may, however, try a second or even a third examination.

Makers who show unwillingness to comply with instructions, who are guilty of habitual negligence, or who do not observe the law and regulations, are struck out of the list of qualified makers, and their licenses and diplomas are withdrawn on the recommendation of the board of examiners by whom they were given. A list of such withdrawals is prepared every year and published far and wide for the knowledge of the public.

of the same methods in all parts of the province, and the uniformity which has been the result of this work is a matter for surprise to all dealers visiting our country.

Inspectors had something else to do than to take up the technicalities in the making of butter and cheese. A new and uncontrolled industry is bound to develop some objectionable practices, which, sooner or later, are declared to be abuses. Our dairying industry had to suffer from these mistakes. Owing to its intimate connection with domestic in-



THE PROFESSOR TEACHING HOW TO PREPARE AND USE FERMENTS

THE PART PLAYED BY THE INSPECTOR

Of course the results obtained up to this day cannot be entirely attributed to the teachings of the St. Hyacinthe dairy school, but are also due to the system of factory inspection which has been operating for over twenty-five years in Quebec. Inspectors who are appointed from the best makers to visit the factories closely watch the various processes of manufacture, and, when required, demonstrate the value of the methods taught at the dairy school. This teaching, this supervision, and these demonstrations, have contributed to the general dissemination

of the same methods in all parts of the province, and the uniformity which has been the result of this work is a matter for surprise to all dealers visiting our country.

dustries, it was the scene of serious abuses, to a larger extent, perhaps, than in other industries, and these abuses very firmly implanted themselves. Chief among these abuses is the extraordinary number of buildings used for the making of butter and cheese, a great many of which are necessarily poorly equipped and poorly built. The inspectors having been created health officers by a provincial law, they make themselves familiar with the regulations of the provincial health board concerning the sanitation of such buildings, and the good effect of their

work is soon felt. These special regulations provide for the washing of the utensils, for the cleaning of contaminated places, for the collection of all residual waters, and the removal of these waters according to the permeability of the soil and slope of the surface.

By-products returned to the farm must be pasteurized.

REGISTRATION OF FACTORIES

All butter and cheese factories must apply for registration to the Department of Agriculture and provide a certified statement regarding their situation. A factory applying for registration is visited by an inspector, who makes a statement of the quantity of milk that is likely to be received, of the suitability of its plant and equipment, and grants registration if the conditions are judged satisfactory.

PREVENTIVE MEASURES AGAINST ABUSES

The "gathered-cream system" has given rise to abuses which are not perhaps so bad in the province of Quebec as in the United States, or possibly in the western provinces; but human nature is about the same everywhere, and it has been judged necessary to take preventive measures against these abuses and to correct them.

The amendment to the factory law—as published in the April number of THE AGRICULTURAL GAZETTE—contains a summary of the first measures which, in our estimation, will show the dairymen that they are branching off in a wrong direction. It will not be necessary to reproduce this amendment. I want to point out, however, that the general inspector is authorized by this law to make regulations with a view to obtain the desired result. These regulations, which were sent with a copy of the amendment

to all butter and cheese factories of the province, are as follows:—

DEPARTMENT OF AGRICULTURE PROVINCE OF QUEBEC

Regulations concerning the classification of cream, the making of butter, etc., in accordance with the authorization given the inspector-general of creameries by article 2031g, amending the Revised Statutes of 1909, respecting the Dairy Association of the Province of Quebec and the manufacture of dairy products.

1. The classification of cream shall be based on its flavour and odour, its fat contents and its acidity when delivered at the creamery.

- (a) In order to be classified as No. 1 or 1st class, cream must have an agreeable odour, a mild and clean flavour, with at least 35 per cent of fat, and acidity not exceeding .20.
- (b) Cream shall be classified as No. 2 or 2nd class when its odour and flavour are not very agreeable, when the percentage of fat is not below .30 and its acidity does not exceed .24.
- (c) All cream which cannot be accepted in either of those two classes shall be returned to the farmer to whom it belongs and who has produced it. The apparatus for ascertaining the percentage of fat in cream shall be either the "Babcock" or the "Gerber;" those for ascertaining the acidity shall be the "Dornic" or "Toussot" acidimeter.

2. As the federal law expressly forbids the use of preservatives for preserving milk and cream, every infraction if this kind must be reported to the inspector-general by the head maker of the creamery.

3. The head maker must keep a special register for entering all ascertainties of percentage of fat, acidity and good or bad odour and flavour of the cream received. He shall, when necessary, send copies of such ascertainties to the secretary or treasurer of the patron's district, and also to the president of such district. The district inspector, or the inspector-general, or any officer duly authorized by the Department of Agriculture, shall have the right to examine such register.

4. As the cream must be delivered at the creamery in the producer's can without being mixed with any other, the owner of the creamery must wash out the can very carefully and sterilize it with live steam immediately after washing.

5. The license or diploma as butter or cheese-maker and the certificate of expert

tester of milk and cream, held by any head maker of a factory, shall be cancelled if such maker does not conform to the present regulations.

St. Hyacinthe, 18th March, 1915.

J. D. LECLAIR,

Inspector-General of Creameries.

These regulations have been approved, after having been studied by the members of the Board of Examiners of the Dairy Association of the province of Quebec.

EXAMINERS
(Signed) { J. D. LECLAIR,
ELIE BOURBEAU,
J. A. PLAMONDON.

St. Hyacinthe, 18th March, 1915.

The whole province is covered by the inspection and, as each factory is visited by an inspector several times during the season, the law will be explained to the makers, and it is highly gratifying to see the favourable disposition shown by our cheese and butter makers.

ONTARIO

BY G. A. PUTNAM, B.S.A., DIRECTOR OF DAIRYING

BEFORE outlining the action which is being taken to make uniform the standard of creamery butter in Ontario it is well to review briefly the development of the industry in the province. Twenty-five years ago the proportion of creamery butter to dairy butter was much less than at the present time. By "dairy butter" we refer to that made on the farm from the milk produced on the same farm. The proportion of this is materially decreasing. This butter is usually marketed in the local grocery, but an increasing number of producers have regular customers in the large centres of population.

The manufacture of butter on a large scale at a central plant has at least four advantages—first, lessening the labour on the farm; second, the manufacture of a high grade of butter of uniform quality; third, provides fresh skim milk for the young things on the farm; fourth, regular returns in the form of cash. These advantages have resulted in a growth from 115 creameries with an annual output of 3,200,000 pounds of butter in 1894, to 161 creameries with a product of 22,425,000 pounds of butter in 1914. While the number of creameries has increased considerably during the past twenty years, the output from the individual plant has grown much

more rapidly. Twenty years ago much of the creamery butter was churned from the cream separated at the creamery, with the result that the maker had raw material, uniform in age and per cent of butter fat. His problems were much more simple than those of the maker of to-day, who has to depend upon cream separated in a variety of ways, varying in percentage of butter fat, and kept for indefinite periods before being delivered to the creamery. The farmers have come to value very highly the skim milk for the young stock and chickens on the farm and are prepared to take a little less, if need be, for the butter produced rather than have the skim milk taken from the farm altogether or returned to him when it is near or at the souring point.

Our problem, therefore, in Ontario is how best to manufacture creamery butter on the "cream gathering" plan. Theoretically, as fine butter should be produced under the "cream collecting" as with the "whole milk" system. Practically, it is more difficult to produce uniform quality under the former system compared with the latter. Our dairy schools, dairymen's associations, institutes branch, staff of dairy instructors and other interests have put their shoulder to the wheel to make the best out of what is not an altogether desirable condition so

far as the production of first grade creamery butter is concerned. That the work has been fairly well done is evidenced in the fact that during 1914 the difference between the prices received for Ontario creamery butter and Quebec butter made on the "whole milk" plan was only a very small fraction of a cent a pound. This difference was more than made up to the farmers in the fresh skim milk available for the young stock.

The agencies utilized in dairy instruction in the creameries are the dairy schools at Guelph and Kingston, a staff of six instructors being employed to visit the creameries as special lecturers.

The course in the dairy schools cover the following: cheese-making, butter-making, separation of cream and milk, milk and cream testing, dairy bacteriology, dairy chemistry, mathematics, feeds and feeding, breeds and breeding, care of boilers and engines, pipe fitting, and general dairy science.

The instruction in these subjects where permissible is made as practical as possible, no theory being taught but what can be put to practical demonstration.

A series of lectures is given by the various instructors in charge of the different departments covering their particular branch or subject. These lectures are further amplified by practical demonstrations conducted by the students themselves under the supervision of the instructor. This practice eliminates the possibility of teaching a false theory, as every theory is put to the proof of *Practical Application*. For this practical work provision is made for an ample supply of milk and cream which is delivered to the School each day, so that in a manner the School might be termed a proving ground where no information is given excepting that which has stood the test of application.

Well stocked libraries are also maintained for the use of the students and are much patronized by them.

At the close of the course, examinations, both practical and written, are given for the benefit of those students wishing to secure diplomas from the school. Having passed this examination, they are further required to conduct satisfactorily, for one season following, a cheese factory or creamery before being given a diploma. This practice adds not only to the reputation of the graduates but to the school as well and puts a value on the diplomas which they otherwise would lack.

The Bacteriological Departments of the Ontario Agricultural College and Queen's University render valuable assistance to the creameries of the province by:

- (a) Instructional work.
- (b) Investigation and research.
- (c) Examination of samples sent in.
- (d) Distribution of cultures for cream ripening.
- (e) Preparation, etc.

In the work of instruction particular emphasis is laid on the importance of the adoption of sanitary methods in the dairy to ensure for its products cleanliness, quality and freedom from the germs of disease. The value of pasteurization is demonstrated, and the use of pure cultures of lactic acid germs to control the fermentation in cream and milk which is to be converted into butter and cheese. Students in the regular college and special courses, many of whom become creamery patrons in after years, receive instruction on the sanitary production of milk and cream and the care of these products in the home and on the farm.

Investigational work of some of the present day dairy problems is carried on as time and opportunity permit.

Advice and assistance is continually being sought by mail by dairy-men and creamerymen on various problems of a bacteriological nature which crop up from time to time. These range from such simple enquiries as to why the milk turns sour to more complicated questions such

as treatment recommended for a tuberculous herd, or a suitable method for manufacturing butter of good flavour and keeping quality from cream both sour and old.

Samples and specimens of various kinds are received at the laboratory for bacteriological examination throughout the year. Among these may be mentioned water samples from creamery wells where there is suspicion of contamination and doubt as to the purity of the supply.

tors have been employed to visit the creameries and give assistance to the buttermakers in the latest methods of manufacture; to get in touch with as many cream producers as possible with a view to inducing them to produce a richer, sweeter and more uniform cream.

A few years ago the instructors were given some power as sanitary inspectors. This has very materially strengthened their work, which may be summarized as follows:—



VIEW OF SMALL BACTERIOLOGICAL LABORATORY DEVOTED TO DAIRY WORK

Pure cultures of lactic acid germs used for ripening cream are supplied to buttermakers at a nominal charge.

Considerable material of a bacteriological nature is collected and prepared for public demonstration and exhibition purposes. Much of this is of educational value to dairymen and creamery patrons and results in a better understanding of the principles underlying the sanitary problems connected with the production of milk and cream on the farm.

For some years creamery instruc-

1. Visits are made to the creameries every month or six weeks from April to November. Wherever the creamery owner will co-operate the instructors go out on the cream wagons, thus getting in touch with the cream producers.

2. A report (copy of which is left at the creamery) of each visit to the creamery and to the farms is made to the chief instructor, indicating the condition of the cream, the butter and the creamery. From these reports and by keeping in touch with the trade, a knowledge is gained of the quality of the butter that is being turned out. Efforts to improve quality may therefore be concentrated in individual cases.

3. Illustrated circulars dealing with the best

methods of producing cream, the patron's responsibility in producing fine butter, the improving and building up the dairy herds, etc., are at the beginning of each season mailed to all creamery owners to be distributed among their patrons. Detailed specifications for building insulated cream cooling tanks for use on the farm are also included in these pamphlets.

4. The instructors are furnished with salt and moisture tests with a view to securing more uniform salting and better texture in the butter. Instruction in cream testing is given where necessary and the use of metric scales for weighing cream samples for testing is encouraged.

Pasteurization of the cream, where practical, is advocated and instruction is given in the preparation and carrying on of pure cultures.

7. Experiments dealing with problems such as "methods of cream cooling," "Pasteurization," and "cream grading" are conducted from time to time at different creameries.

8. Before new creameries begin to operate they are expected to conform to reasonable sanitary conditions. All buttermakers must hold certificates of qualification and every creamery and cream buying station must be registered.



DAIRY SHORT COURSE STUDENTS IN BACTERIOLOGICAL LABORATORY

The latest creamery experiments are discussed with the buttermakers and patrons. Losses occurring through improper methods are, so far as possible, checked up and suggestions for improvement offered.

5. Inspection of the plant is made at each visit and whenever unsanitary conditions exist or defects in equipment are apparent these matters are brought to the attention of the creamery owners with the recommendations that conditions be remedied.

6. Information regarding the disposal of creamery sewage, the building and improvement of creamery storages, creamery accounting and many minor details is given. Plans for septic tanks, etc., are furnished.

9. Models of farm cream cooling equipment, creamery sewage disposal systems, etc., are shown at the larger fall fairs and information regarding the production, care, and testing of cream is given by those in charge and through printed circulars.

10. Each year at the close of the season a special "get together" creamery meeting is held when creamery men, patrons, buyers and instructors are invited to meet for the purpose of discussing the many important creamery problems.

11. The programs of the annual conventions of the Dairymen's associations devote considerable time to addresses and discussion on creamery work. Prizes are offered

for highest scoring butter at the winter dairy exhibitions held in conjunction with the conventions.

12. As many as possible of the annual creamery meetings are attended by their instructors and addresses given on creamery work.

No person who does not hold a

give assistance by careful constructive legislation.

An official of the Department is now investigating methods of grading and marketing butter in the hope that a system suitable to Ontario conditions and needs may be evolved.



STUDENTS PRINTING AND WRAPPING BUTTER

certificate of qualification shall act or be allowed to act as chief maker in any creamery or cheese factory in Ontario.

We look to a future broad gauged policy of quality payment not only for the cream but for the butter as well. It may perhaps be necessary to

With the hearty co-operation of the producers, creamery-men, dealers, and everyone interested in the trade we look confidently to a gradual improvement in conditions surrounding the production and marketing of creamery butter in Ontario.

MANITOBA

BY J. W. MITCHELL, DAIRY COMMISSIONER

THE success of factory or co-operative dairying in Manitoba and the other Prairie

Provinces is, in the main, measured by the success of the creameries. The reasons for this are obvious. The

cream-gathering creamery form of co-operative dairying is the only form that is at all generally applicable to our conditions since they are such that a factory must draw its support from a fairly large constituency, one altogether too great for the dairy delivery of milk.

The cream-gathering creamery system presents problems almost, or even quite, peculiarly its own, and it calls for the taking of fairly heroic steps to successfully cope with them; yet the means we have adopted, and would recommend after giving them

the work at a creamery than it is to get all the hundred or more patrons to supply good cream, it will be readily seen that the big problem is how to secure *not a portion but all* of the cream supply of good quality.

The means adopted for the improvement of the quality of our creamery butter may be classified under two general heads:—

1. Usual educational methods.
2. Grading of the cream and butter.

USUAL EDUCATIONAL METHODS

For a number of years we have



GRADING CREAM AT A MANITOBA CREAMERY

a fair trial, will, we believe, appeal to those interested as eminently fair.

We must bear in mind that under this system the patron becomes an exceptionally large factor in determining the quality of the butter manufactured, since he not only produces the milk but also creams it and cares for the cream for two or three days, or even a longer period, before it is sent to the creamery. If the flavour of any portion of the cream received be defective, that of the butter will suffer proportionately. As it is much easier to set matters right in

carried on educational work in the way of holding meetings, issuing timely bulletins and circulars, making use of the press, and furnishing inspectors and instructors to visit the creameries regularly and continuously, and to render assistance in every way possible to the management, the butter-maker and the patrons. These means we shall continue to make as full use of as possible, as they are, one and all, indispensable to the advancement of the work. However, we have found them not sufficient in themselves and

have adopted other means as complementary to them.

GRADING OF CREAM AND BUTTER

In connection with our work we have made a new application of an old principle and this has worked out most satisfactorily. It has long been the practice to grade live stock, wheat and other articles of commerce and to pay for them on the basis of quality. There is quite as much difference in value between first and second grade cream as there is between first and second grade wheat, and, consequently, just as much

"During the early part of the season we found the proportions of cream coming under second grade to be about 10 per cent of the cream received, but the percentage decreased steadily throughout the season. It is beyond question that, when proper judgment is used in grading, the results are most beneficial."

"Previous to last season it was almost a rare thing to get in a can of sweet cream from an ordinary shipper, while after grading as we did during the past two seasons, we have been able to get fully 40 per cent of our receipts sweet."

However, it took considerable time and patience to get the grading system adopted generally throughout the province.



GRADING CREAMERY BUTTER

reason for paying for the one as for the other on the basis of quality. This is the principle underlying our present grading system and it is meeting with general favour.

As far back as 1910 and 1911 we induced some of our larger creameries to grade the cream and make a difference of two cents per pound of fat between first and second grade cream. After a trial of the system they reported to us and we quote extracts, as follows, from letters received from two different creamery managers:—

In February, 1914, a convention of creamery men, representing practically all the creameries of the province, was held at the Manitoba Agricultural College, and at this meeting two important resolutions, strongly favouring the introduction of the grading system for both cream and butter, were passed unanimously.

The first reads as follows:—

"Resolved, that the creameries of the province should institute a uniform system of grading cream, and that payment to patrons should be made on the basis of the same."

The following as a basis for the grading of cream was subsequently approved by resolution:—

"First Grade Cream:—Preferably sweet, from which first-class butter can be made by a competent buttermaker. The flavour to be clean and fresh, and the consistency smooth and even.

"Second Grade Cream:—Sour or sweet, which is slightly stale, old or bitter, or otherwise slightly defective in flavour, but of a smooth, even consistency.

"Cream which will make an inferior quality of butter should be rejected.

"A difference of two cents per pound of butter fat, between the prices paid for the two grades of cream, should be made."

duction of the grading system were most marked, and its continuation will mean a steady improvement in the quality of our creamery butter, from year to year, and the placing of the creamery business on an ever higher plane. There is little doubt but that the improvement in the quality of our creamery butter, due to the introduction of the grading system, coupled with thorough instruction work amongst the creameries, prevented a slump in prices during the season of 1914.

A considerable quantity of Manitoba creamery butter was stored last



FINISHING A PACKAGE OF CREAMERY BUTTER

The following is the second of the two resolutions referred to:—

"Resolved that the Government be most respectfully and urgently requested to make arrangements for the grading of our creamery butter and furnish the necessary facilities, including cold storage, for carrying out the same."

In principle, the two resolutions became effective at the beginning of the season of 1914, the government, on its part, increasing the instruction work amongst the creameries and appointing a dairy produce grader.

The beneficial effects of the intro-

season by the Winnipeg produce merchants for their fall and winter trade, and it turned out very satisfactory, and as a result there is no hesitancy about storing butter this year.

We have found the grading system of great assistance to the instructors in their work. In fact, the grading and instruction work become one—that is, there is a continuity in the work from the production and care of the cream by the patrons through the work done at the creamery, and on to the marketing of the butter.

SASKATCHEWAN

BY W. A. WILSON, DAIRY COMMISSIONER

TO explain fully what has been done to improve the quality of creamery butter made in Saskatchewan it is necessary to first give a brief review of the business end. Commenting on Saskatchewan's development in dairying one of the leading Montreal papers said,—"It is safe to say that Saskatchewan's career as a dairy province, although a matter of but the past few years, has eclipsed in its phenomenal success the brightest record of every other province in the Dominion." While laying no claims to such an enviable position it is nevertheless true that all conditions considered and in a comparatively short time Saskatchewan has made rapid and permanent progress both in the matter of volume of business and quality of butter manufactured in its creameries. When the dairy branch was established in 1907 two main features in agricultural work retarded the development of dairying:

1. Profitable wheat yields.
2. Unprofitable returns from dairying.

The educational side we believed was inseparable from the commercial so we set about to establish and perfect the latter which course has already worked out to splendid advantage in improving the quality of the butter.

Our early efforts were first concerned with the designing of some policy that would overcome the second condition mentioned above and this was made possible by the businesslike attitude of the Saskatchewan government in giving the industry the attention and consideration it deserved early in its development in preference to permitting the interests to lie dormant until public sentiment necessitated action. The creamery work was the first co-operative undertaking in the province, and it commenced at a time

when there was practically no interest manifested. Two outstanding features of the government's policy will explain the present stability:

1. Discouraging premature organization.
2. Judicious centralization.

Premature organisation usually ends in failure and retards development because of the difficulty in overcoming the influence arising out of an insolvent business. Saskatchewan has had its experience and ten years ago there were quite a number of creamery companies operating which are not known today. There is no one feature that develops the industry more than satisfactory returns to the producer and conversely the opposite obtains. It has been, therefore, the aim of the government thus far to establish creameries only in districts where there was a fair prospect of success, and since the inauguration of the policy in 1906 there has been a large increase in the quality of butter and not one insolvent co-operative creamery company. Confidence has now been established and the work is supported by all who are familiar with the plan of operation. It has an indisputable economic advantage wherein the capital expenditure is reduced to a minimum, and favourable conditions created for a large volume of business under efficient management, thus making possible a reduction in the operating cost and a correspondingly high return to the producer. By actual results it has been demonstrated that former difficulties and objections can be overcome by the adoption of a businesslike policy suitable to the conditions.

Judicious centralization of the creamery work is equally important. Why incur an expenditure of \$12,000 in erecting two creameries when \$6,000 for one would serve the same number of farmers and be capable

of handling all the cream offered in both districts? This and all similar economic questions have been carefully determined, looking towards a strong permanent businesslike commercial organization, the influence of which would subsequently lend itself to a forceful educational campaign to bring the quality of the butter to an equally high standard.

Although the foregoing review may at first appear quite aside from dairy education we take the opposite view and believe that good business organization lends itself to education, in fact is education. The management of a struggling business has really no voice in bringing about modern methods associated with production, but supported by prosperity and creditable results it can guide or even control any system that lends itself to improvement. While building up an efficient business system we did not overlook any opportunity of improving the quality of the goods manufactured, but marked results were not attained until the grading of cream and payment on the basis of quality was introduced. The volume of business having been established, the educational work was a natural outcome, and there remained little to fear from this advanced step, because competition and indiscriminate bidding for business were not likely to have any serious effect.

GRADING CREAM

To prevent misunderstanding and to make success more certain the actual introduction of the plan was preceded by a season's programme among the farmers. In 1911 two dairy instructors were appointed and one of their duties was to discuss the change of payment and to explain the justice of grading cream and paying for same on the basis of flavour. It meant offering a reward in dollars and cents for the best cream and a relative return for any cream not coming up to the highest standard. They solicited objections, they out-

lined its advantages, they dwelt upon its effect with the trade as well as on the individual producers in giving them a monetary return based on merit of service in caring for the cream and advised that the following year it would likely be introduced at all creameries. Subsequently a plan was outlined and the notices for each annual creamery meeting contained an announcement of the policy and invited attendance to discuss and criticise. The writer attended all meetings and at each one a resolution was passed approving the change. Later it was taken to the dairymen's convention and there finally passed upon unanimously. The classification of cream is just in principle and this should remove objections. Besides it brings results in quality that cannot be obtained through any other means. In May, 1912, the co-operative creameries commenced grading cream and paying the farmers on the basis of the quality as determined by the flavour. At first two grades were fixed with a difference in price of 2c. per pound of butter fat as follows:

First Grade:—Cream must be clean and fresh flavoured, preferably sweet, showing no sediment and free from lumps and curdy matter.

To qualify for this grade cream testing 35 per cent or over and delivered at the creamery at least twice a week is recommended.

Second Grade:—Sour or sweet cream, slightly off or strong in flavour, but of a smooth and even consistency.

Third Grade:—Cream that does not qualify for grades one or two. This cream will be rejected.

After two years' operations an "Extra No 1" grade was added. This was deemed advisable because many farmers were sending cream better in quality than the highest standard at first fixed. As their reward and encouragement the new grade was adopted and a higher price offered. They now stand as shown herewith:

Extra No. 1:—Perfectly sweet and fit for domestic trade.

No. 1:—Cream must be clean and fresh flavoured showing no sediment and free of lumps and curdy matter.

No. 2:—Sour or sweet cream, slightly off or strong in flavour, but of a smooth and even consistency.

No. 3:—Cream that does not qualify for grade two.

The advance price on Extra No. 1 is 3 cents a pound of butter fat above No. 1, and 5 cents above No. 2, while No. 1 is 2 cents higher than No. 2.

The flavour and keeping properties of butter determine its market values and this in turn is regulated by the flavour of the cream delivered by the individual producer. Thus by allowing compensation to the producer for the extra work involved in supplying the best grade of cream the educational propaganda operates with every cream cheque mailed to the farmer. In no instance that I know of has a farmer supplying "Extra No. 1" cream withdrawn his patronage, while on the other hand farmers supplying "No. 2" have withdrawn their support, and although the volume of business was lessened to that extent the quality

of the butter because of the absence of much of the No. 2 cream showed an improvement. Their withdrawal in most cases was only temporary since the price paid for the better flavoured cream proved a powerful magnet, and those who yielded to its influence have demonstrated that where dollars and cents are the reward for labour the possibility of the production of sweet flavoured, clean cream is seldom questioned. This practice is the fore-runner of profitable markets which everyone knows means profitable returns to the dairy farmer.

GRADING BUTTER

To carry out and complete the programme of justice as exemplified in grading cream the grading of butter was adopted in 1914 by the co-operative creameries, and for each churning at every creamery an official grade certificate is issued, copy of which is given herewith:

No.....

PROVINCE OF SASKATCHEWAN

Department of Agriculture, Regina

DAIRY BRANCH

Date of Grading.....

GRADE CERTIFICATE FOR CREAMERY BUTTER

I hereby certify that I have this day graded.....boxes of butter from Creamery.....as follows:

(Letter)

..... Packages 1st Grade Creamery.
..... Packages 2nd Grade Creamery.
..... Packages 3rd Grade Creamery.

Perfect Score 100	1st Grade 92 to 100 Points	2nd Grade 84 and under 92 Points	3rd Grade under 84 Points	WEIGHTS	
				As Marked on Boxes Lb.	As Checked Lb. Oz.
Flavour..... 45					
Body, moisture and texture.. 25					
Colour..... 15					
Salting..... 10					
Finish..... 5					
Total points al- lotted.....100					
Churning No.	1st Grade	2nd Grade	3rd Grade		
Churning date....					

Remarks:

Government Grader.

Note that the certificate shows the creamery letter, churning date, grading date, the churning number and the number of boxes packed from that particular churning. Saskatchewan is the only province in the Dominion at the present time that issues an official certificate, and when butter is sold the certificate covering the various churnings is forwarded to the consignee. The score represents the quality of the butter in the judgment of the official grader, and the certificate enables the buyer to sort out easily any special quality or churning and also to verify the government grader's judgment concerning the quality. It also enables the buyer to verify the date of the

churning of butter, consequently if he buys June butter it is not easy to substitute the make of some other month. Experience has amply justified the introduction of butter grading and particularly the issuing of official certificates. Competition in the western trade has become keen and the trade is selecting carefully its butter purchases. In the summer of 1914 thirty-two cars of butter were marketed through the Dairy Branch, Department of Agriculture, Regina, and shipped to outside points, principally the Pacific coast, while at the time of writing indications are that 1915 will show a very considerable increase.

ALBERTA

BY C. MARKER, DAIRY COMMISSIONER

OF all the educational efforts that have been advanced for the improvement and standardization of the quality of our creamery butter the pay-according-to-quality principle has undoubtedly proved the most effective.

This principle is eminently fair. It operates swiftly, and convincingly. It gives point to, and makes available much of the information which has been so generously disseminated through the press and from the platform. It stimulates the desire for more knowledge and places a premium on skilled labour.

In order to trace briefly the development of the pay-for-quality principle in the creamery industry of this province it may be pertinent to state here that six years ago the Department of Agriculture decided to start a campaign of educational work among the patrons of the government creameries, and from a purely marketing point of view. The western markets for dairy produce were then developing rapidly along quality lines and high grade

products were in good demand at remunerative prices.

The object of the campaign was to help put the creameries in a position to cater to the most discriminating markets and to place the business upon a quality basis so far as the individual patrons were concerned. In other words, it was proposed to grade the cream and distribute the net proceeds realized from the sale of the butter not only on a "per pound of butter fat" basis but also according to the quality and relative market value of the butter that could be manufactured from the cream furnished by each person.

Somewhat extensive preliminary trials were made at the creameries in the latter part of the summer of 1909 to demonstrate that the grading of the cream as supplied by each patron was entirely feasible under existing conditions and that it could be fairly done. It was interesting to note that as soon as it became generally known that the creameries were "grading" and keeping a record of the results, there was an immediate

and marked improvement in the quality of the cream furnished by a good many of the patrons who had up to that time exhibited every symptom of carelessness or indifference in the handling of their cream. The educational value of the work became evident at the very start.

The results secured from the local preliminary trials, and the proposed new plan for the payment for cream, were placed before the provincial convention of creamery delegates and afterwards, at the annual general meetings, submitted to the board of directors and patrons of each creamery for consideration.

In every case the Department's proposal met with a practically unanimous approval and at the beginning of the season of 1901 the government creameries undertook to grade all the cream supplied by the individual patrons and to pay a premium of 2 cents for each pound of butter fat contained in First Grade Cream.*

In the same year Mr. P. Pallesen, who had been associated with the provincial dairy service for a number of years, established the Calgary Central Creamery and started his butter making business upon a cream grading basis. His butter output has increased by leaps and bounds and will this year exceed a million pounds. Mr. Pallesen is a strong advocate of grading in the creamery business.

The cream grading principle has now been adopted by practically all the creameries in the province. Each operator sets his own grade standards

and price differentials to correspond with the requirements of his market.

According to complete returns at the close of last season from thirty-two creameries, eighteen worked on two grades, twelve on three grades, and two on four grades.

The price difference in cents per pound of butter fat in each grade of cream is shown in the following table, viz.:

TWO GRADES				
3	creameries	made	a difference	of 2c.
1	"	"	"	2-3c.
4	"	"	"	3c.
5	"	"	"	4c.
5	"	"	"	5c.

THREE GRADES				
4	"	"	"	2c.
1	"	"	"	2-3c.
1	"	"	"	2-4c.
1	"	"	"	1-4c.
1	"	"	"	2-5c.
1	"	"	"	3-4c.
1	"	"	"	3-5c.
1	"	"	"	4-6c.
1	"	"	"	6c.

FOUR GRADES				
1	"	"	"	2-2½c.
1	"	"	"	2-4c.

When the grading of "churning cream" was taken up in 1910 at the creameries operated by the department two grades only were recognized. A premium of 2 cents was paid per pound of butter fat in all first grade cream. Since then the development has been in the direction of closer grading, in sympathy with the movements of the butter market, and a greater spread in the prices paid for butter fat in the outside grades.

Although the local management of the government creameries was transferred in the spring of 1911 to the associations that owned them, the butter marketing service was continued by the department and has since been available to any creamery operator in the province. In all cases the butter is being sold, and the proceeds distributed among the creameries, upon the basis of certain well defined grades. The creameries, in turn, accept cream

*It was the writer's privilege to present a paper on "Grading and Quality Basis Payment of Cream at Creameries" at the Third Dominion Conference of Dairy Experts held at Ottawa in December 1911. This paper, included in the printed report of the conference issued by the Dairy and Cold Storage Commissioner, describes at some length the conditions and considerations which led up to the adoption of the cream and butter grading campaign in Alberta and the procedure that was followed.

from their patrons on grade and pay them accordingly.

GRADING STATIONS

The grading of the butter that has been marketed by the department has been done at Calgary in connection with the cold storage work. In order to assist creamery operators and salesmen to do their own marketing on a uniform basis, an additional grading station was established at Edmonton at the beginning.

The butter grading service is defined in the following (1) Form of Agreement and (2) notes re grading of creamery butter and definition of grade standards.

MEMORANDUM OF AGREEMENT BETWEEN

The Dairy Commissioner, acting for the Department of Agriculture for the Province of Alberta, and

covering the grading of creamery butter.

1. The Dairy Commissioner agrees for the period of one year from April 1, 1915, to score and classify according to its marketable quality each shipment of representative samples of creamery butter received by him from

for that purpose, at the Government Grading Station at Edmonton or at Calgary, to mail as soon as possible thereafter to

or to written order, score cards and grade certificates covering such samples, and to pay on each shipment of butter so received and graded, a price which in his judgment represents its relative market value after deducting:—

(1) The cost of transportation, if any, paid by him on such butter at the grading stations at Calgary or at Edmonton, Alberta.

(2) The cost of packages and other supplies, if any, furnished by him to the said.

2. The Dairy Commissioner agrees to hold for at least four weeks the sample packages of butter for which grade certificates have been issued, in order to facilitate the settlement of possible disputes between the buyer and the seller as to grade of the butter which these sample packages are reported to represent.

3. In consideration of the foregoing agrees to use a separate, serial number for each churning of butter that is to be scored and classified by the Dairy Commissioner throughout the period covered by this agreement.

4. agrees to accept and to carry into effect such directions as the Dairy Commissioner may give from time to time respecting details of the packing, the marking and the shipping of the butter to be scored and graded by him and of the records to be made and forwarded in that connection.

5. It is mutually understood by the parties hereto that in all cases the score cards and grade certificates issued by the Dairy Commissioner under this agreement shall relate only to the packages of butter actually scored and graded and as at the time of scoring and grading.

Dated at	this
day of	191 .
Witness:	.....
Witness:	.....
	Dairy Commissioner.

NOTES RE GRADING OF CREAMERY BUTTER

The attached form for agreement covers the grading of representative samples of creamery butter, a service which the Department offers to all creamery operators in Alberta who market their butter output themselves but who find it impracticable to send the complete churnings to the grading station for grading and marking prior to shipment. The expression "representative sample" means here a 14 pound box (solid pack) from any churning of butter.

Sec. 1. Under this arrangement the Department's scores and grade certificates must necessarily be based upon the quality and condition of the representative samples of butter shipped to and examined at the government grading station. Yet, in the main, the score and classification of each sample should apply at the same time to all packages of butter put up from the same churning and, therefore, bearing the same brand and churning number. We wish to emphasize here that inferior workmanship in the packing of butter is often responsible for lowering its grade, commercially. Hence, equal care should be given in putting up and finishing each package from every churning.

We recommend the creameries to keep a small sample of butter from each churning for comparison with score and grade returns from the grading station and from the trade. Such samples should, of course, be kept in a cool place and in close containers bearing their individual churning numbers, for the purpose of identification.

Sec. 2. While assuming no liability whatsoever in any matter of dispute that may arise as between the buyer and the

original seller of any creamery butter for which grade certificates have been issued on sample, the Department will forward to any given address, on the written requisition of the seller and at his expense, a copy of the grade certificate covering it. The requisition must be made within the time specified in Section 2 of the Agreement and give the brand and churning numbers of the samples required.

Sec. 3 We recommend the creameries to keep in a permanent form a dairy record of each churning. This record is to show (1) the serial churning number and (2) the number and description of the packages put up. The same churning number should be plainly stamped on all boxes put up from the same churning and as soon as they are packed. The utility of the grading service as outlined herein and its continuance will in each case depend upon this rule being conscientiously followed.

Sec. 4. Full shipping directions and report forms will be furnished by the Dairy Commissioner's office, Calgary, upon the completion of the agreement.

Sec. 5. As poor storage facilities at a creamery may cause marked deterioration in the quality and commercial value of butter held there, even for a short time, it is desirable that whenever shipments are forwarded to buyers, subject to grade cer-

tificates, the representative samples should be shipped to the grading station at the same time.

The following grade standards will be used by the department until further notice:

Special Grade, 94 to 100 points, minimum for flavour 41 points.

First Grade, 91 and under 94 points, minimum for flavour 39 points.

Second Grade, 87 and under 91 points, minimum for flavour 37 points.

Off Grade, under 87 points.

REQUIREMENTS FOR "SPECIAL" GRADE

Flavour: Score 41 points and up to 45; fine, sweet, fresh and clean.

Texture: Firm and fine; clear, but not excessive, free moisture.

Colour: Uniform and correct shade, as required by market.

Salting: Not too heavy, well dissolved, thoroughly mixed.

Package: Clean, securely joined together; neatly branded; evenly coated with paraffin wax on the inside surface; good quality of parchment paper lining and print wrappers (when the latter are used) neatly arranged; packages of size and dimensions required by buyer, solidly filled, full weight; bright, smooth surface.

GRADE CERTIFICATE FOR CREAMERY BUTTER

I have this day graded, as under, marked and placed in cold storage, One sample package of butter received from.....and branded.....

	Max Score	GRADE				Remarks:—
		Special 94-100 Points	First 91-94 Points	Second 87-91 Points	Off under 87 Points	
Flavour	45					
Texture	25					
Salting	10					
Colour	10					
Package	10					
	100					
Points given						Dairy Produce Grader.

BUTTER SCORE CARD

	Marks on Packages—Letter								Details and Reference Numbers											
	1	2	3	4	5	6	7	8	Of Defects				To Score							
													1	2	3	4	5	6	7	8
Flavour (45)									Flat	1										
									Heated	2										
									Weedy	3										
									Sour	4										
									Bitter	5										
									Stale	6										
									Metallic	7										
Texture (25)									Salvey	8										
									Brittle	9										
									Weak	10										
									Milky Brine	11										
Salting (10)									Too Light	12										
									Too Heavy	13										
									Undissolved	14										
Colour (10)									Too Light	15										
									Too Heavy	16										
									Mottled	17										
									Uneven	18										
									White Specks	19										
Package (10)									Poorly Packed	20										
									Poorly Printed	21										
									Poorly Wrapped	22										
									Poorly Nailed	23										
									Dirty	24										
									Poor Finish	25										
Total (100)									General Remarks:											
Date:																				
By:																				
Check Weight																				

The creamery operators of the province and wholesale buyers of butter are taking full advantage of the department's butter grading service. At this time more than 250,000 pounds of creamery butter is being scored and graded weekly at the grading stations at Edmonton and Calgary, partly under the terms of the special agreement already referred to and partly under agreement covering the marketing of creamery butter by the department. Score cards and grade certificates, of the forms annexed and covering each lot scored, are delivered to the shippers of the butter.

In adopting and applying the pay-for-quality principle the trade and the creamery operators are rendering valuable service in the building up of an efficient marketing organization from the producer to the consumer. They are helping, directly, to establish higher standards in the quality and value of the milk and cream produced for sale and, indirectly, a keener appreciation of the quality idea in the production of other commodities upon thousands of farms throughout the province.

PLOUGHING MATCHES

Towards the beginning of June, the Editor of THE AGRICULTURAL GAZETTE, recognizing the value of ploughing matches in making for good ploughing, addressed a letter to the Deputy Ministers of Agriculture of all the provinces asking them to furnish answers to the following questions:—

- (1) Under what organization are your ploughing matches conducted?
- (2) The part played by your department?
- (3) What modifications in classification, rules, etc., have been made in recent years to meet the changing methods of cultivation and types of implements used?
- (4) What provision do you make for covering the different parts of the country, and what arrangements do you make with the farmers on whose farms the matches are held?

Following are the replies received:—

NOVA SCOTIA

BY F. L. FULLER, SUPERINTENDENT AGRICULTURAL SOCIETIES

THE only ploughing matches held within my recollection, in the province of Nova Scotia, are a few which were held in the "eighties." These matches were locally arranged, and the amount of prize money (which was small), was made up from donations and entrance fees. From that time until three years ago, I feel satisfied that there has not been a ploughing match in the province. In 1912, the federal and provincial members of parliament for Pictou county contributed \$50, to be given at two ploughing matches to be held in that county, and appealed to the Department of Agriculture for assistance in making prize lists and judging. At that time, I wrote to different sections of Ontario and Quebec and secured copies of posters advertising ploughing matches. As we were starting in here, we simply made two sections for walking ploughs, one for boys under twenty-one years of age, and the other for men twenty-one years or over. In addition to prizes given for the best ploughed ridge, special prizes, donated by firms and private individuals, were given for:

- (a) Best crown.
- (b) " finish.
- (c) " in and out.
- (d) " team on grounds.
- (e) " equipment on grounds.

The two years which have followed have seen a largely increased interest in ploughing matches in Pictou county, and while the Department of Agriculture has no policy regarding ploughing matches, it has assisted to some extent. We think that the initiative in such cases should be taken by the people themselves. Wherever this is done, the Department is willing to give a hand.

The great lack of interest in ploughing is attributed to the fact that, with the use of modern machinery, the only thing necessary seemed to be to turn the land upside down. It is very probable that this fact did not apply to the same extent in Nova Scotia as in some other provinces, and that, therefore, ploughing in the province of Nova Scotia did not deteriorate in the same proportion that it did elsewhere. This is probably owing to the fact that we have large tracts of dyked marsh-land

scattered all over the province, and anyone who has had any experience with this kind of land knows that it takes a good ploughman to handle it in any shape, and, if the best results are to be obtained, a skilled workman is required. Furthermore, the use of modern machinery does not apply to the same extent on this kind of soil as it does on ordinary

upland. For this reason, as before stated, we think that ploughing has not deteriorated in the province of Nova Scotia to the same extent that it has elsewhere; at the same time, the Department is in favour of ploughing matches and is prepared to give assistance toward organizing them.

QUEBEC

ALL ploughing matches under the Agricultural associations and Farmers' clubs are strongly encouraged by the Quebec Department of Agriculture, which allows these associations to use the Government subventions for organizing such matches. Similar competitions are also held by other organizations, which receive a special grant to this effect from the Government.

REGULATIONS

The most important items in the regulations are that the ploughmen must not be followed by another person and that they must not be allowed to go over their work and improve it. There are classes for adults and young men less than twenty-one years of age. Ploughs used may be single or double.

It is required by some associations that the competitors have at least five acres of ploughing for inspection, other associations appoint a date for the contest. In the latter case, competitors must plough five or six hours. Judges do not start their in-

spection until after the competitors have finished ploughing. The following score card is used by the judges:—

	Possible	Points Granted
1. Ridge.....	10	
2. Number of furrows..	5	
3. Last furrow.....	10	
4. Depth of ploughing.	5	
5. Turning over of the furrows.....	10	
6. Clean cutting.....	5	
7. Compactness.....	15	
8. Straightness of land.	5	
9. Level of land.....	10	
10. Regularity.....	5	
11. Width of dead fur- row.....	5	
12. General appearance.	15	
Total.....	100	

The judges also consider the drainage system in the competitors' fields.

Ploughing contests are arranged for every year by a number of agricultural societies, farmers' clubs, and other associations, and the judges are pleased to note that there is an improvement year by year, and that their suggestions are adopted by the farmers.

ONTARIO

BY J. LOCKIE WILSON, SUPERINTENDENT AGRICULTURAL SOCIETIES

FORTY years ago large and substantial grants were given for ploughing matches by both the Federal and Ontario Govern-

ments, and, under the Agricultural and Arts Association, grants were given to agricultural societies which held ploughing matches. Under the

present Act it is permissible for such associations to award premiums for matches, but for a number of years advantage has not been taken of this, and not until 1911 were any definite steps taken to revive interest in these splendid educational competitions that did so much good in the past to encourage clean farming and proper cultivation of the soil. As a result of this neglect, many districts in Ontario became overrun with noxious weeds, and farmers began to realize that something should be done to improve

payable in advance, and a single payment of ten dollars constitutes a life member.

BRANCH ASSOCIATIONS

Provision is made for the establishment of branch associations. The Central Association sets aside fifty per cent of the Government grant for apportionment equally among the branches; the remainder of the funds at the disposal of the association is apportioned two-thirds on membership and one-third on



AT A YORK COUNTY PLOUGHING MATCH

conditions in this regard. A large and enthusiastic meeting of agriculturists was called by the writer, which met in Toronto in January, 1911, and the Ontario Ploughmen's Association was organized. A small grant was made by the Ontario Legislature and a constitution adopted, setting forth among other things that the object was the encouragement of annual provincial, county and township ploughing matches.

Any person may become a member by payment of one dollar per annum,

actual cash expended for prizes. No grant is paid to any branch association unless a return has been made to the secretary of the central association within five days of the holding of the match, accompanied by a statement sworn to before a Justice of the Peace, Commissioner or Notary Public, as to membership for the current year and cash prizes paid at the match. The annual meetings of the branch associations are held between the 15th and 21st of January in each year. A branch association

must have not less than twenty members and may appoint one delegate, whose railway fare when attending the annual meeting of the Central Association is paid by the Central Association, or one delegate may be appointed for every twenty members of the branch, on condition that the Central Association shall pay the expenses of only one delegate for the branch while attending the annual meeting. Directors outside a radius of 25 miles of the Central office are also paid their railway fare by the Central Association when attending

the branch associations are required to send to the secretary of the Central Association within one week after the annual meeting, a report giving the names of the officers and directors of their branches, together with their post office addresses.

THE PROVINCIAL MATCH

Since the date of inauguration three provincial ploughing matches have been held, an average of 2000 people being in attendance each year. Eighty ploughmen entered the competition at the provincial match last



TURNING A PRIZE-WINNING FURROW

board meetings. The annual convention of the Central Association is open to all members of the branch associations, and such members have the right to take part in the discussion of questions coming before the said central convention, but only the accredited delegates from the branch associations, together with the officers of the Central Association, have power to vote at such annual or special meetings. The secretaries of

year, at which valuable prizes were offered. Only the prize winners in each class of the branch associations are allowed to compete in the provincial match. The rules and regulations for the provincial match are as follows:—

1. Entry fee \$1.00 (boys' classes free).
2. Time per acre in sod, 20 hours; in stubble, jointer ploughs, 12 hours.
3. Average depth of furrow, six inches.

4. After setting and removing stakes, no assistance will be allowed in classes 1, 2, 3. Class 1: In sod, open to all; class 2, open to those who have never won a first prize in this class prior to 1914; class 3, jointer ploughs in sod, no wheels or shoe.

5. Selection of land to be by ballot.

6. All ploughmen to be on the field at 8 o'clock a.m., ready to commence work at 9 o'clock sharp.

7. Commencement in stubble must be opened out clean, three inches deep. No attachments allowed on mould boards.

8. Specials for horses; horses and harness to be the property of one man, not necessary for owner to be ploughman.

9. No shaping of furrows by hand, stake or ploughspade, except scratches and first heavy round.

10. The Association will not be responsible for prizes not called for before January 1st, 1915.

11. The decision of the judges to be

final. No interference with the judges in the performance of their duties will be allowed.

Before any branch can receive a grant from the central organization an affidavit must be signed and sworn to by the officers of the local branch.

OFFICERS FOR THE YEAR

The following is a list of the officers of the Ontario Ploughmen's Association for 1915:

Honorary president, Major Jos. Kilgour, Eglinton; past president, James McLean, Richmond Hill; president, A. P. Pollard, Zion; 1st vice-president, Wm. Doherty, Eglinton; 2nd vice-president, L. W. Smith, Millbrook; secretary, J. Lockie Wilson, Toronto; treasurer, T. A. Paterson, Ellesmere.

MANITOBA

BY S. T. NEWTON, SUPERINTENDENT EXTENSION SERVICE, AGRICULTURAL COLLEGE

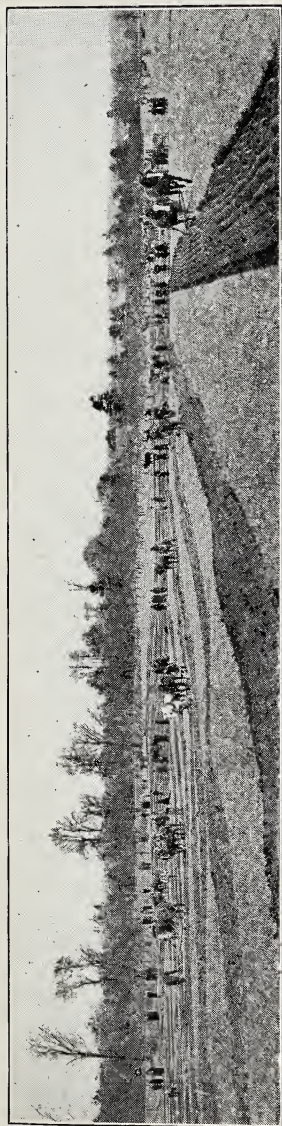
FROM the earliest days in Ontario, the ability to plough a straight furrow was an accomplishment to be proud of, and to Manitoba many of these plough men brought with them their prowess in this branch of agriculture, but there were many new comers who did not appreciate the relation which good ploughing bore to successful farming. Consequently the Government organized ploughing matches almost twenty years ago as a means of demonstrating both the methods of good ploughing, and its advantages in killing weeds and conserving moisture.

During the first few years the matches were held under the direction of the farmers' institutes, but these were few in number and the interest lagged. A few years ago the agricultural societies entered the field and since that time ploughing matches have been growing in favour and now almost one-third of the seventy societies hold annual ploughing matches during the month of June. The matches are not con-

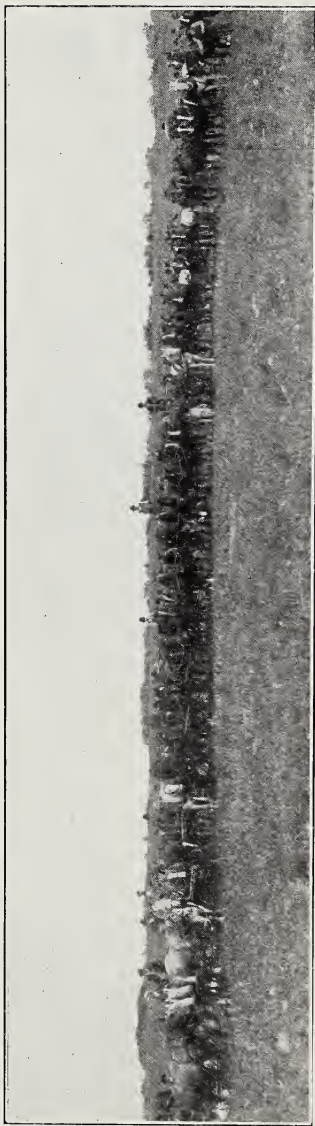
fined to these two organizations, and the Government does not hesitate to lend assistance to any organization of farmers that will comply with the rules governing ploughing matches.

Each organization is free to arrange for its own judges, but the Department of Agriculture, in order to save expense, has arranged that the different organizations may co-operate through the Extension Service Section of the Agricultural College, when the matches are arranged in circuits, so that judges can attend at a minimum of expense in time and railway fares, and, as a consequence, the judging is done by experts who have no interest other than a desire to give the very best service.

So marked has been the improvement in the quality of the ploughing where matches have been held that the Department of Agriculture is anxious to still further encourage matches being held. To this end a bulletin is being prepared by the Extension Service which will fully



ONTARIO PLOUGHMEN IN COMPETITION



LINE UP OF CONTESTANTS AT PLOUGHING MATCH, STRATHCLAIR, MANITOBA

explain how to organize and conduct ploughing matches, the points to be observed and the best methods to follow in doing successful work, the points emphasized by the judges in placing the awards with reasons for the same.

During the past winter the women have taken a deep interest in all features of extension work and have been present in large numbers at the matches, and, as a consequence, the Home Economics Societies are planning competitions for women which may be held at the same time. This year they served lunch at most of the matches and donated the proceeds to the Red Cross association.

The rapidly changing methods of farming have led to changes in the rules. The walking plough has almost ceased to exist and is only used in the garden, and as a result the competition in this class is getting so small that next year it will probably disappear from the prize list altogether. The number of competitors in the sulky and gang plough classes, and for the best fitted team and plough, is steadily increasing.

Each year greater attention is being paid to moisture conservation and weed eradication, with the result that the depth of the furrow has been gradually increased from 4 to $5\frac{1}{2}$ or 6 inches, and the judges give a higher score when the land is turned over flat, thus forcing out the air, than when left on edge in the long straight furrows showing from end to end that used to delight the heart of the ploughman in Ontario.

Up to the present, matches have been fairly evenly distributed throughout the province, but there are many districts where matches could be held with considerable advantage, and next year an effort will be made by the district representatives to have matches organized in several new districts, and a provincial ploughing match arranged for, probably at Portage la Prairie where the most expert ploughmen from each district will meet for the purpose of comparing methods and incidentally deciding who has the honour of being the champion ploughman of the province.

SASKATCHEWAN

BY S. E. GREENWAY, DIRECTOR OF AGRICULTURAL EXTENSION, UNIVERSITY OF SASKATCHEWAN

THE conduct of ploughing matches in the province of Saskatchewan, of which there are being held this year between sixty and seventy, is entrusted locally to the agricultural societies, grain growers' associations, or, in some cases, an individual serving under the municipal council. The general supervision of the ploughing matches is in the hands of the Director of Agricultural Extension at the University of Saskatchewan. The Extension Department suggests rules and regulations under which the matches may be conducted and provides free of cost to the local organization skilled ploughmen to make the

awards on the day of the ploughing.

The rules and regulations which are provided are not necessarily to be followed in detail by the local organization putting on the competition, but are merely suggestions in order to assist the local organization to make the competition interesting and profitable, the privilege being extended to them of varying the regulations to meet the conditions in their particular localities.

There have been no modifications made in the classification to meet the changing methods of cultivation and types of implements used. Good ploughing is good ploughing whether

it be done by the old fashioned walking plough which some societies have discarded altogether, or the up-to-date sulky or gang plough or even the disc plough, conditions imposed being practically the same.

The ploughing matches are arranged in circuits by the Director of Agricultural Extension, and, in order to serve the interests of economy, only one skilled judge has been provided for each circuit and in certain cases additional speakers, if requested, and the communities where ploughing matches are held grouped in such a way as to be most readily accessible to the judge.

The ploughing match is usually held on the property of a farmer whose field is being summer fallowed, and is the result of a mutual arrangement between the owner of the property, who generally provides entertainment for the competitors, and the committee in charge. Quite frequently where the ploughing match is held by the agricultural societies or grain growers' associations the day is given up to the holiday spirit and a picnic held. The use of the field to be ploughed is a gratuitous arrangement between the owner of the property and the committee in charge, the compensation, on the one hand, being a well-ploughed field, and, on the other, a group of farmers who have benefited by what is becoming an excellent means of developing craftsmanship on the farm. The opportunity is eagerly seized by implement men to display and demonstrate their implements.

THE PURPOSE OF THE PLOUGHING MATCH

The object of the ploughing match is to encourage good ploughing on the part of the young men. Good ploughing is the fundamental operation in agriculture and the very basis of good farming. All really successful farmers are good ploughmen. The craftsmanship that is inseparable from good ploughing manifests itself

in every manual act of the farmer. It has been observed that the best ploughmen in the community are not only the best farmers but, generally speaking, the best and most influential citizens.

Good ploughing consists of:

(1) A correct strikeout which is secured by making the first furrow comparatively shallow and "hawing" around for the second furrow. This is to insure a clean operation. The ploughman then "gees" around, throwing back the second and strikeout furrows with a clean undercut in each case, and filling the dead furrow evenly. The plough is then gradually let down to the proper depth in the first three or four rounds. The result will be a uniform and ridgeless "crown or feering". Some careful ploughmen leave an unploughed strip about four inches in width between the strikeout and second furrow made by "hawing" around, which is skimmed with the point of the plough before filling in the dead furrow. This is doubtful economy.

(2) Straightness: Economy of energy is not possible with careless ploughing. Straightness of furrow permits uniformity of collar pressure on the horses; the saving of time by useless twisting and turning; overcomes the danger of weeds left to grow; and demands the nicety of mechanical adjustment which gives ease and pleasure to every part of the operation.

(3) Proper "ins and outs" at ends: The ends of the ploughed land should be straight across. There should be no land left unploughed and no soil should be carried from ploughed land to head land.

(4) The furrow should be of uniform depth and width. The furrow slice should be clean cut in order that all roots be severed and the slice completely inverted.

(5) The "finish" should leave all the land in the field ploughed, the last furrow being uniform in width,

and the dead furrow the depth of the ordinary ploughing. The dead furrow should not be lifted until the judge has examined the ploughing.

(6) Evenness of top of land: Uniformity of the surface of ploughed land secures uniformity of crop other conditions being uniform. This feature is largely valuable from an æsthetic standpoint but is nevertheless economically necessary, as it influences yield and wear and tear on implements.

(7) Covering weeds and stubble: This is the most important economic feature of good ploughing. Weeds and stubble properly buried give less trouble in cultivation, are more likely to be killed and replenish organic matter. The covering of weeds is essential if the soil is to be kept clean.

Good ploughing is essential to:

(1) A good seed bed. It is as economically wise to prepare a good home for field crops as faithfully as for garden or orchard crops. The "four-fold" treasure of the vineyard is an eternal verity.

(2) Weed destruction is not possible with careless ploughing. Good ploughing destroys annual, biennial and perennial weeds and grasses.

(3) Good ploughing ensures the maximum of mechanical ease with the minimum of labour. It is the line of least resistance to the ripened fields.

(4) Good ploughing is ploughing done at the right time. In summer-fallow it is usually in Saskatchewan before June 15. "Make the cistern

before the rain comes." Catch the rain at a time when preparations have been made for keeping it. Generally speaking, ploughing other than summerfallow should be done when the soil is in the best physical condition.

(5) Good ploughing depends on a good plough. This must be sharp and cut clear and free. A badly adjusted plough with a dull share adds largely to the cost of production.

(6) Good ploughing promotes self respect. It is the testimony of many good judges that encouragement in the craftsmanship of ploughing has elevated many young competitors above the level of their environment. If there were no other arguments in favor of skilled effort this would suffice.

The number of ploughing matches held in Saskatchewan during recent years, under the auspices of agricultural societies or grain growers' associations, for which a judge has been supplied by the Extension Department of the University of Saskatchewan, is as follows:—

1910.....	7
1911.....	15
1912.....	21
1913.....	35
1914.....	44
1915 (up to June 12th).....	62

The legislative grant earnable by an agricultural society in Saskatchewan in connection with a ploughing match, is two thirds of the prize money actually paid out, but not exceeding \$65.

The war is teaching us to trust each other and to become trustworthy ourselves. We can only do this if we consider it as our first duty to our country to do our own job, whatever it is, as well as it can be done. This should be the beginning, if not the basis, of everything else. Good business means national prosperity. It is philanthropy of the highest kind. It is the best and only foundation for social reconstruction. The scamped places in our own job become the holes in the nation's armour.—*Co-operation in Agriculture for June.*

PRINCE EDWARD ISLAND

THE INSPECTION OF MEATS

AT a Social Survey Convention, held recently in the city of Charlottetown, there was formed a Provincial Association for the Promotion of Industrial Education, with the following officers:

President, R. H. Campbell, Chief Superintendent of Education; vice-president, Mr. J. O. Hindman, president of the Board of Trade at Charlottetown; secretary-treasurer, Mr. J. A. Clark, Superintendent of the

Agricultural Experiment Station at Charlottetown.

At the convention an illustrated address was given by Dr. Pethick, Federal Meat Inspector, Prince Edward Island, on the subject of "Local Meat Inspection". A resolution was passed requesting the permanent Committee on Social Survey to wait upon the proper authorities to urge that the inspection of all meats sold be made compulsory.

NOVA SCOTIA

TRAP-NEST IMPROVEMENT

BY J. P. LANDRY, MANAGER AND LECTURER, POULTRY DEPARTMENT

THE demands upon my time in connection with extension work prohibits me from writing fully on the improvements we have been making in trap-nesting. An additional reason for not doing so at this juncture is founded on the fact that this year's records will not be completed until November 1st.

We have made some very satisfactory improvements in the records of our fowls and have followed a system

of selection by the use of the trap-nests. The pullets are placed in the pens in the fall and the records are kept during winter. The very best fowls are kept in the pens each year for our breeders; all others are turned off when the pens are mated up, about March 1st.

We have placed a new type of trap-nest in our pens; which is a very satisfactory type indeed.

MACDONALD COLLEGE

MARKETING WOOL CO-OPERATIVELY

BY H. BARTON, B.S.A., PROFESSOR OF ANIMAL HUSBANDRY

IN the extension work of the Animal Husbandry Department of Macdonald College the sheep industry of the province is being made a prominent feature. It is believed that the possibilities for sheep

in Quebec are great, and that there is a splendid opportunity and urgent need for work on behalf of the sheep interests. Through the assistance of the federal grant, the Department has been able to arrange and conduct

a number of lines of work, one of which has been the organization of local sheep breeders and wool growers associations. Through these, much greater interest is being stimulated in sheep, and flock improvement is being encouraged in every way possible. Some of the more important channels of effort are in encouraging and facilitating the exchange and introduction of pure bred rams, in establishing pure bred and high grade flocks, in marketing of lambs, and in marketing of wool.

Mr. A. MacMillan, a member of the Animal Husbandry Department, has been placed in immediate charge of the sheep work, and through his efforts and the local College Demonstrator, Mr. King, the first association was organized in Pontiac county, and, as reported previously, a start was made last year in marketing wool co-operatively. The association marketed about twelve thousand pounds of wool. The wool was graded and sold direct to manufacturers for cash at an advance of from five to seven cents a pound, or a net gain of 20 to 30 per cent to the farmers.

During the past winter, plans were made to organize a number of associations, so that this year might see a start of similar work in various parts of the province. It might be men-

tioned here that to insure that such associations be organized successfully and the wool marketed through them to advantage, a great deal of thorough preliminary work is necessary. In this, the local college demonstrator or representative has a good field for work, but he must have had first hand knowledge of sheep, and a little experience in wool preparation for market, before he can undertake this work and command the respect of sheep men.

With the assistance of Macdonald demonstrators a large number of lectures and demonstrations in the proper methods of shearing, tying fleeces, docking and castrating lambs, etc., were given in the various districts. As many farmers as possible were induced to join the associations and be supplied with wool sacks together with instructions for preparing their wool for market.

Associations were formed in eight districts and arrangements made for grading and marketing wool on definite dates at certain important points within the districts.

The following is a statement showing the various grades for the districts and the total quantities of wool marketed together with the returns made:—

WEIGHTS OF WOOL

Association	Lb. Fine Medium Combing	Lb. Medium Combing	Lb. Low Medium Combing	Lb. Lustre Combing	Lb. Black and Gray	Lb. Rejec- tions	Lb. Other Grades
Pontiac.....	277	25,138	11,531	2,436	660	709	2,906
Compton.....	100	5,362	4,330	2,663	105	289	
Stanstead.....	163	6,834	1,629	1,031	85	194	
Richmond.....	72	3,776	1,931	3,489	180	435	147
Beauharnois.....	...	1,763	2,338½	3,525	199½	469	306
Bedford.....	...	2,337	1,588	2,460	60	257	
Argenteuil.....	...	3,445	1,362	1,364	126	75	
Sherbrooke.....	146	3,221	1,817	605	23	233	
Totals.....	758	51,876	26,526½	17,573	1,438½	2,661	3,359

Total pounds of wool marketed..... 104,192
 Total value..... \$31,689.20

NUMBER OF MEMBERS AND FLEECES

Association	Number of Members	Number of Fleeces	Average Weight per Fleece	Average Price per Fleece	Total Amount Received for Wool	Average Price per Lb. Wool
Pontiac.....	413	6,182	7.06 lb.	\$2.15	\$13,348.30	30.57 cents
Compton.....	150	1,806	7.1 "	2.15	3,890.27	30.27 "
Stanstead.....	83	1,222	8.1 "	2.50	3,060.90	30.80 "
Richmond.....	75	1,360	7.33 "	2.23	3,022.07	30.12 "
Beauharnois...	79	1,029	8.3 "	2.48	2,549.23	29.63 "
Bedford.....	55	815	8.1 "	2.46	2,045.65	30.52 "
Argenteuil.....	67	910	7.0 "	2.13	1,938.01	30.63 "
Sherbrooke.....	53	812	7.4 "	2.26	1,834.77	30.35 "
Totals.....	975	14,136	7.37 lbs.	\$2.29	31,689.20	30.36 cents

The results show that 51% of the wool graded medium combing, 27% low medium combing, 17% lustre combing, 3% black and gray and 2.6% rejections. The low percentage of rejections and high percentage of medium combing are a clear indication of the value of Quebec wool when properly prepared for market. The wool was marketed in good condition,

unwashed, put up in attractive shape, and was described by manufacturers as being of high quality, probably unequalled in Canada and quite the equal of similar grades of imported wool. This fact is substantiated by the prices manufacturers were willing to pay for such wool when marketed in quantities to make it worth their special attention.

Medium combing realized 31 to 31¾ cents per pound.

Low medium " " 30 " "

Lustre " " 30 " "

Black and gray " 25 to 26 " "

Rejections " 25 " "

All F.O.B. point of shipment.

The above prices range from five to ten cents above the prevailing local prices, thereby netting the farmers an advance of from 20 to 30%. The fleeces ranged in weight from 7.0 lb. average in one association to 8.3 lb. for another association, and prices per fleece ranged from \$2.13 to \$2.50. It will be noted in the report that in the case of the Pontiac association, the only one of two years' standing, the increase in wool marketed as compared with the first year's output was

over three hundred and sixty per cent.

Canadian manufacturers paid these prices to the associations when they were buying wool ordinarily at much lower prices, partly because the associations had a large quantity of wool to sell at certain points where it could be inspected, partly because the manufacturers needed it and had to pay for it to get it, but also because they were getting wool well put up, and good value for their money.

ONTARIO

DISTRICT REPRESENTATIVES' CONFERENCE

THE Conference of the District Representatives of Ontario, held at the Agricultural College, Guelph, on July 14th, 15th and 16th, and presided over by the Assistant Deputy Minister of Agriculture, Mr. C. F. Bailey, had for its object a discussion of their many and varied activities and an exchange of views in regard to methods.

The winter short courses in agriculture, and the developments that are an outcome of them, together with the management of school fairs, constitute the most impressive lines of work. During the past season, 1,115 students attended the short courses. The following conclusions were reached in regard to this work:—

1. That the plan of organizing through a committee formed some months ahead in the locality where it is proposed to hold a course, gives the best results.
2. That wherever possible, the courses should be held at points accessible by railway, and where board and lodgings may be procured.
3. That the courses should last about four weeks, and that they should be held as early in the year as practicable.

A more careful selection of lecturers sent by the provincial Department was looked upon as essential, and that a clearer understanding should be had in regard to the phases of the subjects assigned them, so as to avoid covering ground already gone over.

In some counties a two weeks' course for farmers' daughters in household science, sewing and poultry work, has been held with marked appreciation.

JUNIOR FARMER ASSOCIATIONS

The Junior Farmers' Improvement Association, with several branches in each county, was organized with a view of keeping in touch with the young men who take the courses, and thus continuing the work begun. Two meetings are held in the representative's office, one in the spring and another in the fall, to discuss plans and results. In addition, monthly local meetings are held.

The activities of this organization include acre-profit, and hog and calf feeding competitions, cow recording, experiments with alfalfa and other crops and variety tests. These undertakings are not confined to the members of the organization, however, but may, in most cases, be engaged in by all who take the short courses.

This year, in one county, all the short course students were supplied with three pounds of Grimm alfalfa seed, enough to sow an acre in drills, 30 inches apart, with the object of distributing a hardy variety over the district.

In the acre-profit competitions now going on, six hundred are taking part in 43 counties. Contestants are required to make a report showing conditions and methods. The feeding competitions are less popular. The winners in each county are given a two-weeks' free course in stock and seed judging at the Agricultural College. These contests have aroused more interest than anything of the kind ever undertaken in the province.

In each county, a team of three men will be selected from among the short course men to compete in a

contest in judging live-stock and horses at the Guelph or Ottawa Winter Fair. The prizes will consist of trophies, medals and cash.

THE SCHOOL FAIR MOVEMENT

The popularity and extension of the school fair movement continues, and calls for a great deal of time and attention both on the part of the representatives and teachers. This year, 235 township school fairs will be held. These fairs, as the name implies, are exclusively for children and have no connection with the adult organizations. The crops grown at home from the improved strains of seed distributed, and the chickens raised from the eggs supplied, form the chief basis of the exhibits. Instructions accompany the supplies. Two visits from the representative are called for in order that advice and direction may be given. Prizes are given for the best kept plots. In one county there are 3,000 plots under supervision.

In addition to training the child in growing crops and in business methods, it is found that the rest of the family become interested and share in the benefits. Many parents save the produce of the plots and soon have sufficient seed of a good strain for their own requirements. The inspections also enable the representatives to make the parents' acquaintance, and to give assistance and advice where needed. This year, many of the children who have potato plots will give the crop to the war fund.

A uniform system is to be devised for keeping track of plots and entries and for identifying exhibits. Award ribbons and certain other supplies will in future be purchased by the department at reduced cost, instead of by the representatives. Next year, a vegetable-growing competition will be arranged for. With the exception of the prize money, which is raised locally, the cost of the work is met by the Department.

OTHER LINES OF WORK

Among other lines of work conducted by the representatives, the following may be briefly noted:—

1. Variety tests of corn for silage. These tests are being extended to cover practically every county.

2. Alfalfa tests. These were begun three years ago to demonstrate the importance of using hardy strains, and to provide a source of seed supply. In no case was failure reported with the Grimm and the Ontario variegated strains. For seed production the drill method is proving most satisfactory.

3. Fertilizer tests. These require to be followed up for several years, as results with certain forms of fertilizers are scarcely apparent in the year of application.

4. Promoting seed centres for the production of seed of improved quality under regulation by the Canadian Seed Growers' Association.

5. Promoting the organization of farmers' clubs, breeders' clubs, county boards of agriculture.

6. The compilation of a census of pure-bred stock, and of a breeders' directory.

7. Furthering the movement for forest-planting, drainage and co-operative undertakings.

With regard to the last, it was pointed out that a marked need should be shown by local trade conditions before organization was attempted, and that success was more likely to follow small beginnings than province-wide movements. To avoid initiation mistakes early direction should be sought from the Department.

Some disposition has been shown to throw the responsibilities of management of these organizations on the shoulders of the representatives. In their desire to further the undertaking, representatives had in some cases assumed financial obligations. Representatives were further advised not to place orders for seed, but to endeavour to direct farmers to reliable sources of supply.

The working staff, including representatives, assistant representatives (of which there are two in some of the larger counties) and office help, comprises 135 persons. In many

cases motor cars have been provided out of the county grant. Motor supplies are to be obtained in future through headquarters.

To assist the province in this work, \$114,000 will this year be provided under the AGRICULTURAL INSTRUCTION ACT.

NOTES FROM DISTRICT REPRESENTATIVES

SUPPLIED BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

WENTWORTH COUNTY

R. L. Vining, B.S.A.:—

"Recently what was perhaps the first inter-county game of baseball between Junior Farmers' Associations was played at Milton between teams selected from the boys who attended the short courses at Ancaster and Milton. The final score was 27-18 in favour of Ancaster. Everything passed off very nicely, and one feature that I liked particularly was the friendly good fellowship shown by the boys of these two counties. Excursions of this kind furnish an opportunity for the farmers of tomorrow to get acquainted.

"At the annual meeting of the Institute for South Wentworth we were able to have two of the Junior Farmers in each township elected to the Directorate of the Institute for next year. By this means I hope to give the boys some good training and also have their assistance for new enterprises from time to time."

MIDDLESEX COUNTY

I. B. Whale, B.S.A.:—

"Mr. Finn has visited several schools that are not in the school fairs. At Mt. Brydges the pupils asked for instructions on testing milk and cream. They purpose purchasing a tester for the school and they are anxious to do testing for the farmers in the neighbourhood. They also asked numerous questions regarding different crops.

"The Junior Farmers of Strathroy continue to hold their monthly meetings, in order to keep in touch with each other, and to know what is being done in the different localities. As the boys belonging to this association come from four different townships, the Fair Board at Strathroy has offered very good prizes for the township which puts up the best educational exhibit at their fair. The boys who have been shipping potatoes and grain this spring, have written on the shipping tags 'From Middlesex Junior Farmers' Improvement Association.' This is simply a means of advertising a little, and next spring, they purpose advertising the products which they have for sale, and shipping

through the association, if it can be worked, and I see no reason why it should not be successful."

BRANT COUNTY

R. Schuyler, B.S.A.:—

"Letters have been sent to the Jersey breeders of the county inviting them to meet in our Brantford office Saturday, July 3rd. Our object is to organize these men in a Jersey Breeders' Club, as we have received in the past inquiries re the advisability of this move. Our Jersey breeders are rather few in number, possibly eighteen or twenty, but they are much scattered throughout the county. An organization cannot help but serve their interest."

GREY COUNTY

H. C. Duff, B.S.A.:—

"We inspected a field of sweet clover on Mr. Jos. Buchanan's farm and found the plants to range from 18" to 32" in height. This field was sown at the rate of 15 pounds to the acre and if the quality of the hay proves equal to the yield, we will not hesitate to talk about sweet clover in the future. On some portions of the field good catches of clover were unknown in the past. The sweet clover is thick everywhere but in a few places it shows the need of inoculation, which Mr. Buchanan neglected to do. We also looked over an acre of Grimm alfalfa with which we are experimenting on Harry Shaw's farm. Last fall the untreated portion was not as good as the rest, but this year we cannot see any difference. The field is by long odds the most uniform and best in the district."

BRUCE COUNTY

N. C. MacKay, B.S.A.:—

"On June 20th we cut our sweet clover plots and were very much pleased with the results. These were sown on two farms in a series of 8 plots, two sweet clover and six alfalfa. The sweet clover (not inoculated) yielded at the rate of 15¾ tons green

material per acre. Part of this we are curing for hay and the remainder has been fed to the stock on the farm. All classes of animals appear to be very fond of it. The clover was a magnificent stand, being about 3 feet high and as thick as it could grow. The alfalfa, which received exactly the same treatment, probably will not yield more than one-quarter as much."

LANARK COUNTY

P. S. D. Harding, B.S.A.:—

"We have been receiving quite a number of enquiries regarding the handling of grasshoppers. In view of the number of enquiries and of the large area of sandy soils, and the fact that this county was subjected to a grasshopper plague last year, we saw fit to send out in the neighbourhood of 1,000 postcards giving directions as to the method of control. We are anticipating this coming week to visit one of the worst infested areas with the idea of trying out a cure in order to get the people started towards the wholesale destruction of this pest. Last year enormous areas of crops were completely destroyed, and it was to avoid repetition that we have taken these measures."

"I am glad to report very good success from our work in distributing directions for the killing of grasshoppers. When at the Hoptown Bee Demonstration I met a considerable number of farmers from the locust affected areas, and nearly every one had tried out this treatment with decided success and said if they had not done something towards the destruction of this pest they would have lost a greater part of their crop. I was told that a few people owing to rather careless application of the poisoned bran had lost a few of their hens, but this is not at all general. I was told by a farmer at Middleville that he knew of a neighbour who lost two or three lambs by following his neighbour's advice and scattering poisoned bran in small piles over his corn field, and the lambs gained access to the corn ground with rather disastrous results."

WATERLOO COUNTY

J. S. Knapp, B.S.A.:—

"Recently we had meetings of our School Fair Boards for Wellesley and Woolwich. Mr. Strong attended the Wellesley meeting and reported a fair meeting with seven directors present. At Elmira I had every new director present and a number of old directors. I believe this was the best school fair meeting I ever attended. Every director was ready to

discuss matters and to move and second motions. A girl director was elected as president of this fair association. This is an innovation for Waterloo County. I am enclosing a copy of a request sent to this meeting by the people of that neighbourhood who have been trying to secure the fair for their section this year.

"Dear Sir,—Several of the ratepayers of this section asked me to inform you that if you will hold the fair at Winterbourne, they will allow you the free use of the hall, church grounds, sheds, etc. They think these are inducements above those which other places can offer. Hoping it may come this way, I remain, yours truly, JNO. MAHOOD."

YORK COUNTY

J. C. Steckley, B.S.A.:—

"We attended the first annual picnic of the Junior Farmers' Improvement Association on June 15th, and although it was a very disagreeable day to start with we had a very good turn out. About thirty of the boys were present and along with their friends had an excellent time. They made a whole day of it, leaving home early in the morning and not returning till night. The day was spent in sports and a short programme of toasts. We also had a short business meeting during the afternoon. Everybody voted the affair a success and was anxious to make it an annual affair."

HALTON COUNTY

H. R. Hare, B.S.A.:—

"Our experiment in spraying with the iron sulphate and copper sulphate for mustard has been exceedingly satisfactory. Only one application of this has so far been applied but we intend to make one more application as soon as the weather is favourable. Seventy-five per cent were of such a succulent, vigorous nature, that although the leaves were destroyed yet the flowers and plants were not altogether destroyed, so that another bloom is quite evident. It is quite essential in spraying for mustard that it be done early in the season to get the best of results."

HASTINGS COUNTY

A. D. McIntosh, B.S.A.:—

"Reflecting on some of the lines of work which have occupied considerable of our attention, it is gratifying to note that results are becoming more evident daily. About a dozen young men are keeping

herd records this year for the first time in the history of the farms they live on. More pure bred sires are heading herds than ever before and the tendency to go into pure bred stock is evidenced by the large herds of uniform Holsteins and Ayrshires seen on every cross road in agricultural sections. The drainage campaign we have carried on in conjunction with the Physics Department of the O.A.C. has at last brought us a large traction ditcher to help complete the system for which we have made so many surveys. The increased acreage of alfalfa and sainfoin clovers, and the largely increased number of silos and acreage of corn would seem to indicate that our encouragement to the dairy industry at the short courses and special series of meetings is having good results. It is significant too that recently four young men have been into our office to discuss ways and means of taking a course at the agricultural college, and that the larger public school pupils from various sections are beginning a regular correspondence with our office, mostly re school fall fairs."

OXFORD COUNTY

G. R. Green, B.S.A.:—

"On the same day I went to the June meeting of the Southern Counties Ayrshire Breeders' Association at Straffordville. The meeting was well attended by Ayrshire breeders in the six counties covered by the association. Mr. E. S. Archibald of Ottawa and Mr. Dan Drummond were the principal speakers, and after a short, interesting talk by each in the town hall, the meeting adjourned to the yard, where about thirty specimens of Ayrshire cattle were for a regular judging class. The peculiar condition in connection with the marketing of milk here this season has led to an increased activity in breeding Ayrshires. Some of the condensers are adopting the 'Pay by Test' system. The association shows every indication of prosperity and this will doubtless be a record year in the history of the organization. 'Scotch Thistle,' one of the heifers sold at the sale held by this organization in December, has since that time broken the record, and several others are giving a good account of themselves. You will readily understand that this augurs well for the association, as well as some of the other things that the officers are doing.

"I suggested also to the County Council that steps be taken by the individual councils to destroy during the summer, at the same time as the weeds are being destroyed along the road, all the scrub apple, cherry and thorn trees, which are harbouring so many American Tent Caterpillars. This is really a matter to be taken up by the individual councils, but I thought it well to mention it at the meeting of the County Council, when all the Reeves of these councils were present. I have reason to believe that in some of the townships, Blenheim particularly, the suggestion will be carried out."

HALDIMAND COUNTY

G. L. Woltz, B.S.A.:—

"In response to a call from the trustee board of S. S. No. 3, Rainham, Mr. Archibald and I rendered assistance in laying out a new school ground. Grading stakes were placed at regular intervals over the ground and a system of drains planned as well. Ornamental trees and shrubs will be placed on the ground in due time. These improvements will make the school very attractive, and the spirit is largely due to the work of the rural school fair.

"The trustee board of the Hagersville High School has drawn my attention to an expression of appreciation on behalf of the ratepayers in connection with the short course in agriculture held in that school last winter. In order that more of their sons might receive elementary agricultural instruction, they have asked that an agricultural teacher be regularly employed. The board has decided to take steps immediately in securing a competent man and in fitting up a suitable class room."

LAMBTON COUNTY

G. G. Bramhill, B.S.A.:—

"On Monday of this week I appeared before the County Council and asked for grants for carrying on agricultural work in the county of Lambton. I am very pleased to report that in addition to the \$500 annual grant, the following additional sums were voted:—\$25 for each school fair, \$200 to the Lambton County Corn Growers' Association and Vegetable Growers' Association."

SHORT COURSES FOR JUDGES

AS has been the custom for the past few years, the Ontario Department of Agriculture held short courses of instruction for expert judges of live stock, poultry and field crops. The live stock and poultry judges are those supplied for the fall fairs that are held throughout the province. The field crop judges are the officials who judge the standing fields of grain held by the agricultural societies. This year about one hundred and twenty field crop judges will be employed. The competition is the largest in the history of this movement, embodying about 60,000 acres of crop grown by about 6,000 farmers.

The courses were held at the Ontario Agricultural College, Guelph, during the last week of June and at the Experimental Farm at Ottawa on July 6th, 7th and 8th. The short course at Guelph was for judges residing west of the county of York, and at Ottawa for those east of that division. At Guelph about 250 judges took the course, and at Ottawa 150. The purpose of these courses is to secure, as far as is practicable, uniformity in judging.

The courses were conducted by Mr. J. Lockie Wilson, Superintend-

ent of Agricultural Societies, and were in charge of officials of the Dominion and Ontario Departments of Agriculture and other recognized authorities. The programme provided for three sessions each day. The morning and afternoon sessions consisted of demonstration lectures followed by discussions and finally the placing of the animals by the judges. A half day was given to each class of stock as heavy horses, light horses, beef cattle, dairy cattle, sheep, swine and poultry. To cover the ground two classes were going at the same time. For the standing field crop course the use of the score card was demonstrated in the judging of plots. Evening sessions consisted of addresses by prominent officials and discussions bearing on the work.

At the experimental farms the judges were entertained to luncheon each day. It was recommended by Mr. J. Lockie Wilson, Mr. J. H. Grisdale, Professor C. A. Zavitz, and others, that in future all the judges be brought together in one course meeting in alternate years at Ottawa and Guelph. The expenses incurred in the holding of these courses are provided for under THE AGRICULTURAL INSTRUCTION ACT.

PURE BRED LIVE STOCK CENSUS

THE Ontario Department of Agriculture, through the district representatives, have taken a census of the pure bred live stock in the various counties of the province. In every instance an endeavour was made to secure the name of the breeder and his address, the breed of live stock and the number according to ages. It is thought that the information thus obtained will assist materially in locating pure-bred stock by those desiring to make pur-

chases. It will also bring into notice some small breeders and encourage them to further effort. Another result is to make the "pure-bred" men and their capacity better known to each other. This is being proven by the formation of a number of county breeding clubs. These clubs make it an object to hold a series of meetings during the year at which live stock subjects are discussed. A prominent feature is the impetus that has been given to co-operation. It

should have the desirable result of extending the use of pure-bred males in grading up the stock of the country. The Department proposes to

maintain the work thus begun by having the census of pure-bred stock taken at intervals and thus kept up to date.

APPLES HALF A CROP

THE District Representative of Dundas county, having sent out enquiries as to the prospects of the apple crop, received responses which justify the expectation of only half a crop. The reports received include most of the large commercial orchards of the McIntosh and Fameuse. Injury from frost was additionally severe back from the influence of the St. Lawrence. Some

of the large orchards on the front report practically no injury. Owners of 3000 trees in Dundas sent in replies that in the aggregate would indicate one-third of a crop, a large grower in Grenville estimated the likelihood of three quarters of a crop, and half a dozen owners of 783 trees in Stormont and Glengarry said the prospects favoured half a crop.

THE DIRECTORSHIP OF ELEMENTARY EDUCATION

DR. James B. Dandeno, Ph.D., Principal of the Bowmanville, Ontario, High School, who has been appointed to succeed Prof. S. B. McCready as Director of Elementary Education in the province of Ontario, was brought up on a Wellington county farm and has had three years' public school and fourteen years' high school experience, teaching agriculture for the last three years in Bowmanville. He is a B.A. of Queen's University with honours in science, a honour M.A.,

and received his Ph.D. degree from Harvard University, where he specialized in agricultural subjects and holds a Public School Inspector's certificate. He was Associate Professor of Botany in the Michigan Agricultural College for eight years and for four summers Instructor of Botany in the Harvard Summer Schools. This summer he has been teaching agriculture in the New Brunswick Summer Schools. He has also published the researches made by him in agricultural subjects.

MANITOBA

BETTER FARMING INSTRUCTION VIA AUTOMOBILE

FOR a number of years it has been the custom of the Manitoba Agricultural College staff to tour the railway lines of the province in the interest of better farming; instruction and demonstrations were given to assembled farmers at different points at which the Better Farming Demonstration Spe-

cial, as they were called, were scheduled to stop.

This year a departure is being made. Instead of the regular visit of the trains a series of Auto Lecture Tours has been arranged and the college staff divided into five or six groups of lecturers, who are now holding

meetings in different sections of Manitoba.

By using automobiles it is hoped to get into closer touch with the actual conditions on the farms of the province, to get better acquainted with the people, to discover new methods of farming and the reason why success was not obtained in certain localities.

Although it has been satisfactory in the past to hold meetings at railway points, it is planned to hold the majority of meetings this year in places at some distance from the railways, in schoolhouses, churches and groves. Most of the meetings are being held in connection with large agricultural picnics, organized by the local associations. The forenoon is generally spent in examining silos, alfalfa fields, successful herds and well planned farmsteads. Visits are being paid to farms where unusual conditions prevailed or annoying problems had to be faced.

Each automobile carries four or five speakers—three on agricultural subjects and two on home economics. Charts and other illustrated matter were taken in each car, the various bulletins published by the Department of Agriculture, etc. Requests for the latter are being received and forwarded to the college from each point. It is unnecessary to say that it is impossible to carry very much equipment for demon-

stration purposes on tours of this kind.

Fully two hundred meetings will be held during the month and it has been gratifying to find that the municipal councils, grain growers' associations, agricultural and home economics societies and other organizations are lending their heartiest support to the Department of Agriculture and the Agricultural College in making these meetings a success.

In addition to the entire college staff several experts on particular phases of agriculture are engaged in this work at the present time.

Notwithstanding the fact that the weather has been very unfavourable, the tours have opened up with a very satisfactory attendance at these meetings, ranging from 75 to 400. Most of the meetings are being held west of Portage la Prairie as the district in the Red River Valley can be readily served at any time of the year from the college.

Among the subjects being discussed are the following: feeds and feeding tests; silage; silo construction and location; profitable poultry raising; the dairy herd; permanent agriculture; lightning control; weed eradication; alfalfa inoculation; moisture conservation; work of the agricultural college; extension service; women's work in Manitoba during our national crisis; home economics demonstrations, etc., etc.

SASKATCHEWAN

AGRICULTURAL IMPLEMENT COMMISSION

THE report of the commission of inquiry into agricultural implement sales was tabled in the legislature of Saskatchewan on June 8th. The commission consisted of Judge Newlands, chairman, Hon. W. F. A. Turgeon, Attorney-General, Hon. W. R. Motherwell, Minister of Agriculture, and

Mr. J. A. Maharg, President of the provincial Grain Growers' Association. The findings of the commission divided themselves into two main divisions: first, relating to the smaller and horse drawn implements and, second, to power outfits. With regard to the first class, the commissioners confine their recommen-

dations to the necessity for warranties and the provision of facilities for obtaining repairs. The points covered by the warranty they consider should be given by the vendors of all small implements are that the machine is well made and of good material; that it will perform the work for which it is intended and that it will be durable with reasonable care. They found the conditions surrounding the sale of power outfits were not as satisfactory as in the first case and, therefore, made the following recommendations regarding contracts:

First:—That the contract contain such detailed warranties as to the capabilities of

the machine as will remove the main opportunity for misrepresentation which now exists, and further that the ordinary rules of law governing the liability of principals for their agents be made to apply to sales of farm machinery.

Second:—That a statutory contract be adopted in which the selling companies will give proper warranties covering the construction, operation and durability of the machine sold, and that the farmers can upon application obtain necessary repairs at a place to be specified in the contract.

Third:—That the selling companies should not be allowed to take any security on land at the time of the sale, nor for six months after the delivery of the machine to the farmer.

Fourth:—That all dealings with the homestead be invalid unless with the consent of the owner's wife.

RECENT EDUCATIONAL METHODS

THE Regina Exhibition Board, co-operating with the Department of Agriculture and the Credit Men's Trust Association held the first annual farm boys' camp from July 27th to 31st. The Canadian Men's Credit Association of Winnipeg have promised \$1000 for each of three years towards the expenses. As a consequence only \$1.50 is asked from each boy to partly cover railway fare and board. All boys 14 years of age resident on farms in municipalities employing agricultural secretaries are eligible to join the camp. Four hours daily were devoted to competitions in stock judging, grain judging, identification of plants and demonstrations. A unique feature was a competition in judging by teams of ten boys from different municipalities. Over two hundred boys representing sixteen municipalities were in attendance. The trophies won in the five judging contests, comprising the judging of cattle, horses, wheat, oats and barley, were presented to the winning teams by the Hon. W. R. Motherwell, Minister of Agriculture.

The better farming trains which have been on tour have met with greater success than last year. During the first week upwards of 4,500 persons visited the trains, including 1,000 school children. At Instow the pupils of ten schools attended in a body, accompanied by the teachers. The nursery car proved a great boon to mothers. Lectures on birds, insects and poultry were specially favoured by the children.

At the end of the itinerary of the field crops train on July 24th, a live stock train of eleven cars was organized with the object of emphasizing the live stock side of agriculture, especially as regards the growing of fodder crops. Two cars of choice live stock were supplied by the Saskatchewan College of Agriculture, including a heavy draught horse, Holstein, Ayrshire, Hereford, Angus and Shorthorn cows, Yorkshire, Berkshire and Tamworth hogs, and a pen of cross-bred sheep. A covered flat car was used as a platform on which to display the animals. Two cars

formed a farm women's section, one being used as a nursery car in charge of a matron. Lectures were given on cooking, laundering, sewing and home nursing. Exhibits were made of labour-saving devices and of articles of special interest to poultry raisers. A car of mechanical appliances suitable for the farm, of steam, gas and

electric engines and farm tools, and models of buildings with particular regard to sanitation, heating and lighting. The forage crop section comprised two lecture cars in which problems relating to tillage methods, the growing of cultivated hay, clover, corn, roots and other forage crops were discussed.

BRITISH COLUMBIA

APPLE PACKING CONTESTS

THE British Columbia Department of Agriculture has notified secretaries of agricultural associations in the province that the Department will again donate prizes for apple packing contests at fall fairs. In a circular addressed to the secretaries the Department recommends the following rules to govern these contests:—

(1) The management of the fair to furnish necessary tables, paper, boxes, and apples for the contest, as follows:—

- (a) One table for each competitor, about $3\frac{1}{2}$ by 4 feet dimensions, with bur-lap cover, after the usual pattern.
- (b) Three Standard boxes either 10 x 11 x 20 inches inside (the Canadian box) or $10\frac{1}{2}$ x $11\frac{1}{2}$ x 18 inches (the American box), whichever is most generally used in the district. The boxes should be of good material and properly made, as the character of the box has much to do with the quality of the pack.
- (c) Paper. For each packer about 3 pounds of paper, 9 x 9 or 10 x 10 inches in size, depending on apples.
- (d) Apples. About six boxes No. 1 apples, of one variety, 150 per box and larger, in assorted sizes so as to provide suitable variety of pack.

(2) Entry fee of \$1; entries to close about one week before fair. Contestants to draw lots for places and numbers.

(3) Apples to be placed on the tables by disinterested persons, aiming to place on each table a fair average of the whole lot.

(4) All apples to be packed diagonally.

(5) Each contestant to pack three boxes, time to be taken when contestant places last box on the floor.

(6) To secure perfect or 20 points for speed, the contestant must pack the three boxes within twenty-five minutes; every three minutes longer will reduce the score two points, and if not finished within sixty minutes, the contestant will be ruled out.

The following score-card to apply:—

Speed.....	20
Uniformity of grade and pack....	15
Alignment.....	10
Bulge.....	10
Height at ends.....	10
Firmness.....	20
Wrapping.....	15
Total	100

(7) Not less than five competitors. If less than five, 1st Prize will be \$10; 2nd Prize \$5; no third. If less than four, only one prize \$5.

Judges of fruit are instructed to give these contests special attention. The prizes are: first \$15.00; second \$10.00; third \$5.00. The prize money will be paid direct to the winners by the Department on receipt of the signed report of the judges.

PART III

Rural Science

THE MODERN RURAL SCHOOL

In order that educational officials in every province might possess the advantage of advanced ideas on the building and equipment of schools, a letter was addressed to the Deputy Ministers of Education or Superintendents of Education, asking that each forward to THE AGRICULTURAL GAZETTE what was regarded as a model for a rural school in his province in buildings, equipment and grounds. The inquiry resulted in the following contributions in reply:—

NOVA SCOTIA

BY A. H. MACKAY, SUPERINTENDENT OF EDUCATION

THE Manual of School Law of 1911 contains over twenty pages of specifications for the rural school, its library and its work, and exhibits two simple outline plans, No. 1 for the smallest and No. 2 for the ordinary rural school.

This No. 2 is not a consolidated school, such as model rural schools should be. It is a school with one teacher, in a school room in the centre normally of an area of about 12 square miles. This allows the most distant pupils to travel afoot to school from points no greater than two miles, with a minimum physical exercise of forty minutes. These maxima are probably the more essential determinants of the territorial size of the rural "school section," as it is called in Nova Scotia.

THE BUILDING

For a section with 54 pupils, the prescription runs: width of house 25 feet, length 41 feet (hall 6 feet, teacher's platform space 5 feet, seats and desks 23 feet, space to rear blackboard 3 feet), and height 13 to 14 feet.

Single patent adjustable seats and desks are recommended, although double seatings are tolerated.

Blackboard around the room, hard, dark, emery-charged, chrome-green, recommended. Hyloplate is now coming in.



~ FRONT ELEVATION ~

RURAL SCHOOL HOUSE No. 2

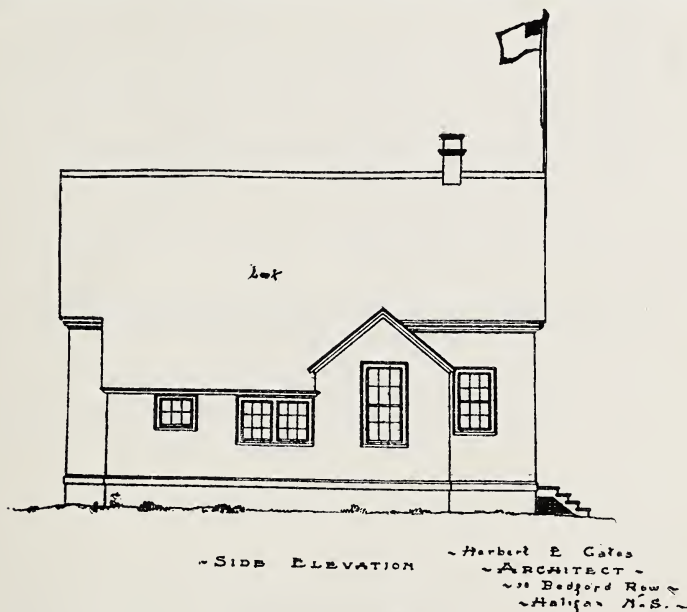
Lighting abundant and high on the left side of the pupils, with appropriate blinds.

On the right, chart and blackboard surface, behind which is (1) the fuel-room and (2) the manual training workroom with at least one bench and full equipment of tools, as shown in the elevations.

Every school room must have a library case for the preservation for reference of literature (official and

The name of the school section and the date of the erection of the building must be decorously conspicuous on its front, so that the passer-by may be able to note the æsthetic and intellectual status of the community from the appearance of its school house.

The specifications for the location, construction, shielding and care of the outhouses are considered so important that inspectors are directed



RURAL SCHOOL HOUSE No. 2

general) supplied to, or obtained for, the use of the school or the inhabitants of the section.

It must be capable of being warmed and ventilated in the coldest winter weather, by a jacketed stove of sufficient capacity, or a hot air furnace beneath, with intakes for pure air.

There must be a flagpole on the building, or in an appropriate place on the grounds, and a Union Jack or the Red Ensign.

not to recommend the payment of any of the municipal fund to trustees of schools in which they are defective or improperly cared for, until the defects are remedied.

THE EQUIPMENT

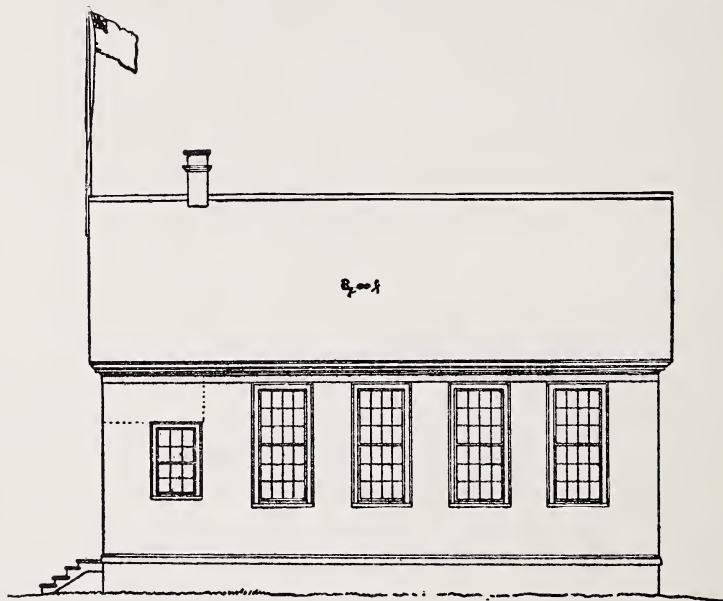
Every school must have a teacher's desk, with accommodation for the preservation of the prescribed registers, and should have such books of reference as are prescribed by the

council of public instruction from time to time.

These include a dictionary which all the pupils should be instructed to use, as well as standard works of reference on the natural history, industries and resources of the country, etc.

There must be at least maps of the Province, the Dominion, the

employed, to entitle the school to the extra rural science grants, there must be sufficient physical and chemical apparatus for the illustration and demonstration of the physics and chemistry underlying the more easily understood operations in agriculture, horticulture and forestry; local collections of minerals, rocks, etc.; plants, woods, fungi, etc.; insects;



— SIDE ELEVATION. — Herbert E. Gates —
ARCHITECT —
— Bedford Row —
— Halifax N.S. —

RURAL SCHOOL HOUSE No. 2

Empire and the hemispheres, a terrestrial globe, wall cards, wall pictures, colour charts, music charts (tonic sol-fa modulator), ball frame, geometrical and drawing solid models, common and metric standards of weights and measures, coloured as well as white crayons for blackboard work and illustrations, thermometer, hand bell, etc.

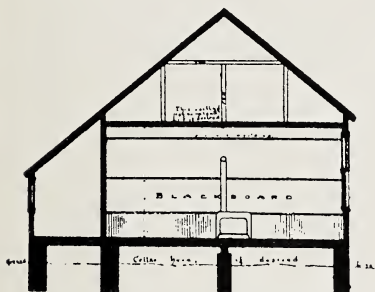
Where a rural science teacher is

charts or plates of birds, useful and injurious; physiological charts, some graphic statistics, and an annual record of local phenological observations, which are to be sent in for general compilation on printed forms to the superintendent of education, who has them bound in annual volumes for the scientific archives of the province. A summary of these have been published

annually for more than 20 years, in the Proceedings of the Royal Society of Canada, and in the Transactions of the Nova Scotia Institute of Science; and within the last few years, by the Meteorological Department of Canada.

The rural science library is an essential for the rural science school, when it must contain a considerable proportion of standard popular and reference books on all the local industries.

The school library also serves as a book club for the parents of the school section, the books being borrowed and returned by the pupils. A card catalogue and accession book are kept by the teacher; and an



A SECTION. RURAL SCHOOL HOUSE No. 2

annual report is made showing the number of books on hand, added and lost, and the number of each of the twelve classes of books read or in circulation during the year. If these reports show that the regulations have been carried out, that the library is of the 1st or 2nd class, and the circulation has in each case attained the prescribed minimum, the teacher obtains as the librarian the annual extra grant of \$10 or \$5. The library must be the property of the school section, although reporting annually to the Education Department through the inspector, who is, in Nova Scotia, the paymaster of the Department within his own inspectorate.

THE GROUNDS

These are recommended to be not less than one acre, in the most salubrious and beautiful spot obtainable by expropriation or otherwise near the centre of the section. They must be graded and æsthetically enclosed. In rural science schools, a portion of the grounds has to be set off in lots for school garden experiment plots, and another portion for flowers and ornamental shrubs.

In some places, it is found useful to have the most of the experimental garden plots at the pupil's home; a drawing of the plots on a uniform scale to be kept regularly in the school for the weekly (or more frequent) report of the pupil on the progress of the plants in each bed.

The grounds require to be ample in order to give room for games for the boys on one side and for the girls on the other side. The majority of rural sections are yet erring in not understanding the importance of ample school grounds; and many fail to put the grounds into the form recommended. The reduction of the grant is necessary to secure attention to this, as to other desiderata of the rural school, in many places.

The rural school is gradually becoming the most important social centre of the rural section. Public meetings, often political meetings, are held in it, or in the hall above it. School entertainments, concerts, etc., to raise money for library books, apparatus, or other aids, are becoming common to supplement the too often scanty vote of the ratepayers at the annual meeting.

For many years the following comment prefaced the regulations prescribing the minimum requirements for rural schools and their general equipment:—

"The school house with its grounds is a very true index of the general public spirit and intelligence of the school section. Being the common centre of habitation for a

large portion of the day of that part of every family naturally drawing forth the deepest emotions of affection and interest, the character of the school house and its environment must substantially reflect the sentiment of the community. Here we should expect to see the accumulation of efforts constantly made from year to year, embellishing grounds at first selected for their convenience, salubrity and beauty of position, and adding to the useful apparatus and general equipment of the school room, originally constructed with a

view to healthy physical, intellectual and moral development. The people should have reason to be proud of their school house, which should bear on its front the name of the school and the year of its erection. The following directions are intended more particularly for rural schools, as in the towns the custom has already been established by trustees and school commissioners, of examining the most modern improvements before proceeding to build, and of employing a competent architect.

QUEBEC

BY THE HON. BOUCHER DE LA BREURE, SUPERINTENDENT OF PUBLIC INSTRUCTION

I have been asked to state briefly what is the model for a rural school in this province, in the matters of building, equipment and grounds. I may say at once that while the Department of Public Instruction has for many years put forth much effort to encourage improvement in these directions, there are still many rural schools which fall far below the ideal. They are of the cold, cheerless type observable in so many portions of this continent. However, a new spirit has been awakened in recent years, thanks to the very rapid spread of the school garden movement. In encouraging the idea of beautifying the school grounds this movement is also drawing attention to the need of making the school building in keeping with the surroundings.

The department furnishes plans for the larger rural schools, and the school boards are constantly advised by the inspectors and from the department to make the buildings, the grounds and the equipment as attractive as possible. Moreover, for some years now the government of the province provides very substantial bonuses to the school boards making the most progress in these directions particularly. The recommendations are made by the inspec-

tors. The grants under this head last year amounted to \$10,800.

I do not think that the model rural school should be of one type. Architecturally, of course, it should express the purpose of the building. For our Canadian winters it should be built for warmth and proper ventilation. The general plans issued by the department take these points into consideration. The grounds, and the site in general, should not be some portion of the community regarded as fit for nothing else. A good site is selected for a church. The school, also, as a permanent local institution, should be well situated. The ideal grounds will have plenty of space for play, and trees will be planted in the right places on Arbor Days. Suitable hedges, such as may be seen at academies in some of our smaller towns, are possible at many rural elementary schools.

As for equipment, apart from the indispensable maps, globes and blackboards, the first consideration at the rural school should be the school library. As a community centre, the rural school is, or may be, a great factor. With a happily chosen collection of good books, suitable for the pupils and their elders, much may be done to make country life more attractive.

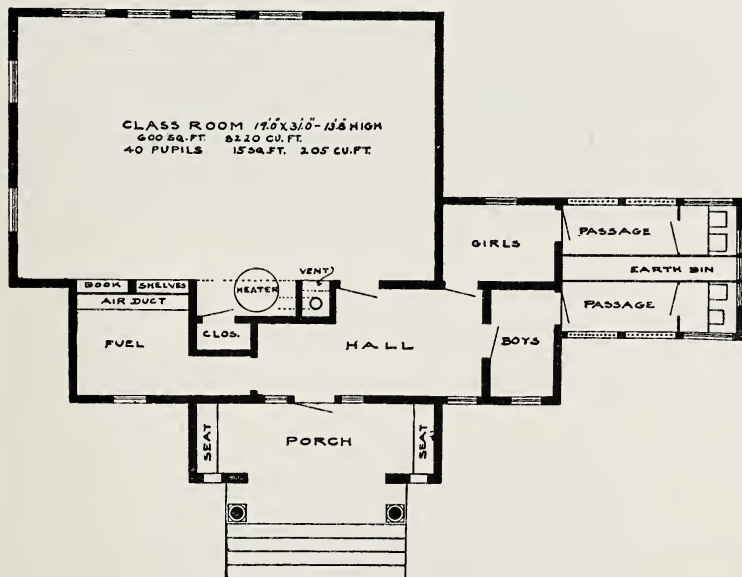
MACDONALD COLLEGE

EXAMPLE BUILDINGS

BY SINCLAIR LAIRD, HEAD OF SCHOOL OF TEACHERS, MACDONALD COLLEGE

RURAL schools established and conducted by the United States Government in the Philippines are better than the "little old red school house" in any of the states at home simply because they are built and maintained by the Government without consulting the local inhabitants.

thus the locality has too much power and sufficient pressure cannot be brought to bear by the Department of Education to secure improvement. From this point of view the only salvation lies in greater government support and consequent greater control. Indeed, if education were a civil service as in France, controlled



FLOOR PLAN OF A ONE-ROOM RURAL SCHOOL WITH MODERN TOILETS, ERECTED IN DISTRICT 7, NEWCASTLE, WESTCHESTER COUNTY, STATE OF NEW YORK

The curse of rural education in Canada and the United States is the system of decentralised school administration with its small school boards of three or five local farmers whose interest is not in education, but in a low education tax. Another hindrance is that too little financial support is given from each government and too much is raised locally;

without political interference, there are enough educational experts in Canada to manage education satisfactorily if they had a free hand to exercise their profession, just as officials do in the navy.

Another reason why government schools for subject races are successful is that attention is paid to the local requirements, and the curriculum is

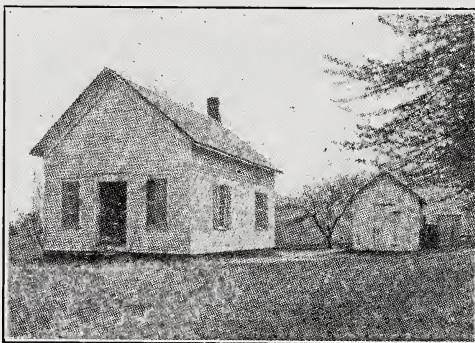
suited to the future occupation and life of the native. Indeed, preparation for future work is one of the main aims of such instruction which is more practical than bookish.

The first illustration shows the plan of a one room rural school with modern inside toilets. This might serve as a model for such a school.

additional window space in the consolidated school.

When outbuildings are detached they should be screened by wooden walls or bushes and trees as in the second illustration.

Consolidation of schools whenever possible should lead to improvement in buildings and teaching. Illustration

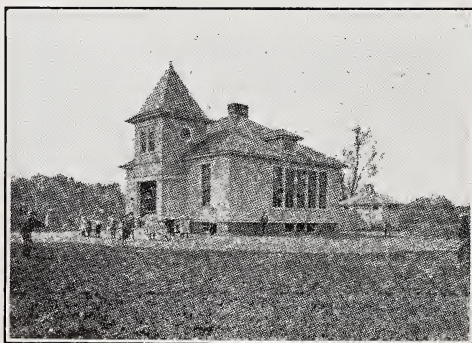


BUILDING OF A DISTRICT WHICH WAS CONSOLIDATED
WITH A THIRD DISTRICT

Such a building is comfortable, convenient, well lit and well heated. The closets are separated, accessible in all weathers and sanitary.

Many rural schools are badly lighted and should have more window space. The third and fourth illustrations give an idea of improved lighting that is made by

tions 3 and 4 show what is possible in this respect. Additional value is given if a teacher's residence is attached, so that a permanent teacher may be obtained and may remain for years. This has given Scotland, France, and Switzerland an unexcelled supply of permanent male teachers for rural districts, who live



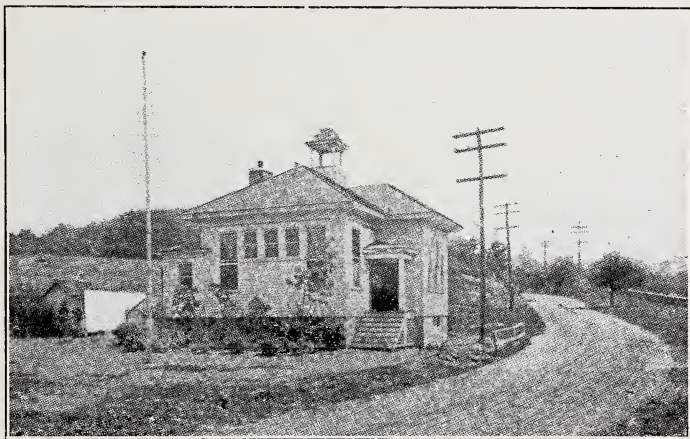
BUILDING OF CONSOLIDATED DISTRICT

and rear their families in the country and identify themselves with the community.

The equipment should all be modernized. Individual and adjustable desks should be introduced and desks

on no account should an open pail and common dipper be used.

Provision should also be made for a hot lunch even if this is only in the shape of soup or hot water for the making of cocoa. The afternoon



A WELL LIGHTED SCHOOL HOUSE

should be adjusted twice a year—at the beginning of the school year and at Christmas. Sanitary drinking fountains are indispensable also and

session would then be more profitable to both teachers and pupils.

School grounds should be used for several purposes. First, for play-



A TYPE OF MODERN SANITARY OUT-BUILDINGS

grounds; second, for school gardens or demonstration plots; and third, for decorative purposes. The fourth illustration shows the effect of even a few small bushes. Although this school is placed too near the road and its beauty is thus considerably diminished. Sufficient playground space should be kept for both boys and girls to indulge in their favorite games. The grass should be kept cut and the paths clean, flower plots well looked after and fences kept in repair. If there is a well on the playground, care should be taken that no contamination from sewage or surface water is likely to take place. If the school garden is maintained, it should be cared for during the summer months. In some cases this is done by voluntary work on the part of the pupils or a floral bee on Saturdays, when flowers are gathered for the rural church on Sundays. In many cases, however, it is found more profitable to conduct the teaching of agriculture in the schools and have

the work done on home plots, which are inspected and supervised at regular intervals by the teacher. In such a case the co-operative work in gardening in the school should be confined to the care and beautification of the school grounds and buildings. This is done by means of hardy perennials, bushes, and trees. Window boxes of creeping plants are, in some cases, employed to add additional beauty to the building and give material for nature study lessons.

Wherever possible the school building should be used as a community centre for the use of the public as well as for the children. Local libraries, as well as school libraries, might be conveniently placed in the school building even although they are separated from the schoolroom proper; and in every possible way parents and tax payers should be encouraged to take a pride in the school buildings and grounds and in the success of the teaching.

ONTARIO

SUMMARIZED FROM OFFICIAL PUBLICATIONS

SHOW me your school-houses," said a shrewd farmer. "They will tell me more about the people of your township than I can learn in any other way. The school-houses have no prejudices, they speak the truth, and the whole truth, about the attitude of your municipality towards all that makes for genuine progress." That farmer was right. "Like people, like school," is true oftener than it is not.

The above paragraph was taken from a blue book of the Ontario Department of Education entitled "Plans for Rural School Buildings," which gives particulars advisable to follow in the direction of these structures. This publication sets forth in exact terms all the requirements for an up-to-date school. It

gives the desired dimensions, details of cost, character and quantity of material required, and arrangements and equipment necessary for buildings of various sizes in the matter of accommodation. Illustrations and many diagrams drawn to an exact scale are given.

The information furnished in this book has been emphasized by a circular issued last year containing instructions to inspectors and school boards in the premises. These instructions place especial stress on sanitation and healthful accommodation not only for the pupil but also for the teacher. Where circumstances permit it is urged that the school-buildings should have both gardens and recreation grounds in connection. In short that provision should be

made for the cultivation of both mind and body.

Referring to outside premises the school site shall not be less than one acre in area, unless, owing to the smallness of the attendance or to other local conditions, the inspector finds a smaller area permissible; but in that case the area shall not be less than half an acre. It shall be accessible by good highways and not exposed to disturbing noises or noxious odours, and shall also be at a safe distance (not less than 100 yards) from stagnant water. The grounds shall be properly levelled and drained and provided with suitable walks, and shall be sufficient in extent for school games and for an ornamental plot in front. They

should also be set out with trees and ornamental shrubs, and enclosed with a neat and substantial fence or hedge, with suitable gates.

Where practicable, provision should be made for school gardens. In order to ensure good drainage and water supply, the soil should, if practicable, be sandy or gravelly, not clayey or peatty. No trees shall be placed so close to the school building as to check the free passage of air and light.

The Deputy Minister bears witness to the fact that the policy of the department as embodied in these publications has resulted in a considerable improvement in the school architecture.

MANITOBA

BY CHAS. K. NEWCOMBE, SUPERINTENDENT OF EDUCATION

MODELS have their uses. They set up an ideal. They furnish the star to which we may hitch our chariot. They are of real value to the enthusiast and the professional worker. But to the average citizen, the defects of their qualities are too apparent. They are remote and unattainable.

Just about a year ago we began to work upon the task of presenting to the trustees of Manitoba our idea, not of a model, but of a standard rural school; something not too remote, but which might be realized in every school district in the province.

We have in Manitoba sixty Consolidated Schools. They are making good progress, and here and there among the group we find school boards arranging courses in agriculture, and the beginning of some work in home economics. Almost without exception the sites of these schools comprise from five to ten acres of ground, and in several cases teachers' residences have been erected. The

number of Consolidations will increase as time goes on and the feasibility of the scheme is more clearly demonstrated to the farming community.

But there will always remain in our province many districts where Consolidation, for various reasons, is neither feasible nor desirable. In these districts "the little red school house" will remain the temple of education. Accordingly it was our purpose to outline what we considered might for the present be taken as a reasonable standard for the twelve hundred and eighty six one-roomed schools now in operation in Manitoba. The following circular was drafted and sent out to every rural school trustee in the Province:—

IS YOURS A STANDARD SCHOOL

A standard school is a good, one roomed rural school, a school which aims to give an adequate educational opportunity to the boys and girls in the district.

The requirements for such a school are:—

I. YARD AND OUTBUILDINGS

1. School site of at least two acres, properly fenced, with tree-planting well begun.
2. A school garden.
3. Two well kept, widely separated, screened outbuildings.
4. A convenient fuel shed.
5. A suitable flag pole with flag in good condition.

II. THE SCHOOL-HOUSE

1. School-house well built, on good foundation, in good repair and neatly painted.
2. Well lighted (from the left.)
3. Attractive interior decorations, fresh whitewash or kalsomine, pictures, flowers, exhibits of work.
4. Good blackboards—some suitable for small children.
5. A standard heater and ventilator.
6. Floor, desks and cupboards clean and tidy.

III. FURNISHINGS AND SUPPLIES

1. Properly placed desks, suitable for children of all ages.
2. Good teacher's desk and several chairs.
3. A good book case.
4. A good collection of supplementary readers, and of carefully chosen books for general reading.
5. Set of maps, globe and dictionary.
6. Sanitary water supply, wash-basin, soap and towels.

IV. ORGANIZATION

1. School well organized and classified.
2. Well kept records, filled in daily.
3. A working time-table.
4. Regular attendance.
5. Open at least 200 days in the year.
6. Good discipline.
7. Co-operation between trustees and teacher with frequent conferences.

V. THE TEACHER

1. Second-class professional, or better.
2. Rated by Inspectors as a good teacher.
3. Attend Conventions and read one or more Teachers' Journals.

TO THE SCHOOL TRUSTEES OF MANITOBA:—

When the above conditions are present, a school should be efficient. These conditions are within the reach of practically every district in the province. Thirty-five thousand children attend rural schools in Manitoba. Are we providing for their needs? Check over the requirements one by one—does your school measure up to the standard? If it falls short in any particular, what can you do to improve matters? Think it over. There is nothing too good for the children. Their welfare is entrusted to you.

Yours very truly,

CHAS. K. NEWCOMBE,
Superintendent of Education.

The response has been gratifying. Many school boards have made real efforts to measure up to the requirements outlined.

Desirable additions will readily suggest themselves. Provision should be made for school games. A good coal-oil stove would enable the teacher and pupils to do practical work in home economics by preparing a hot noonday lunch. A Babcock tester would make it possible for the pupils to test out the cows in the farm herd. Two or three manual training benches with appurtenant tools might well be supplied, and some provision should be made for teaching the girls to sew. A good gramophone, with a collection of well selected records, has a place in every school. The nature student will have his aquarium. A good stereopticon will help to bring home to the little dwellers on flat land the conceptions of world geography.

The tale is without end. For comparatively small expenditure the life of the one-roomed rural school may be enlarged and enriched far beyond what is to-day its all too meagre content.

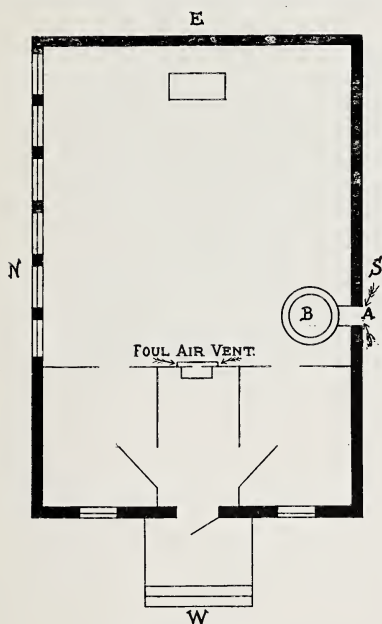
SASKATCHEWAN

BY A. W. COCKS, DIRECTOR OF SCHOOL AGRICULTURE, REGINA

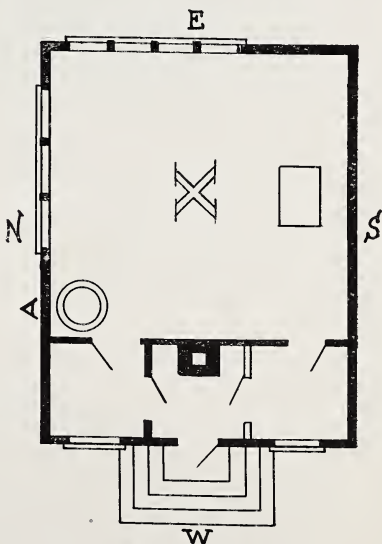
SCHOOL boards are recommended to choose for a school house one which is built according to simple plans, providing that these will secure for the health

Roomy cloakrooms should be provided for the children's hats and wraps. The hooks should be strong and firmly fixed to the walls. Shelves for dinner baskets and stands for a water tank, a wash basin and a water pail should also be provided.

The windows in all classrooms should be so placed as to admit light only from the left of the pupils unless by reason of special conditions it is found advisable to admit light from the rear. Windows should never be placed directly in front of the pupils. They should be so arranged as to open easily from the top and bottom for purposes of ventilation.



PLAN 1.



PLAN II.

and comfort of the pupils and teacher suitable light, heating and ventilation.

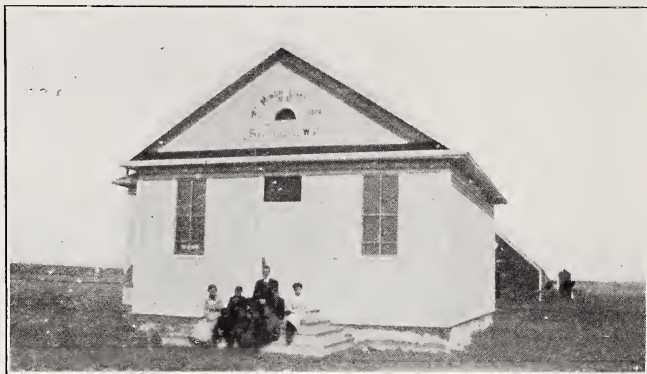
It is considered unwise for school boards in rural districts to build expensive school houses. Every school room should be built of such dimensions as to allow at least eighteen feet of floor space and two hundred cubic feet of air space for each pupil in average attendance. The width of the room should be from two-thirds to three-fourths of the length and the ceiling should be at least eleven feet high.

The total area of the window glass should be equal to at least one-sixth of the floor space. The window sills should be approximately three feet high and the tops of the windows should extend to within six

inches of the ceiling. Storm sash or double windows with ventilators at top and bottom should be provided when the school is to be kept open during the winter months. Screen doors and windows should be provided for the summer.

and east, as in plan 2, in which case the window sills at the north are about six feet from the floor.

The building is a frame structure on a cement foundation and is provided with a combined heating and ventilating system. Fresh air is

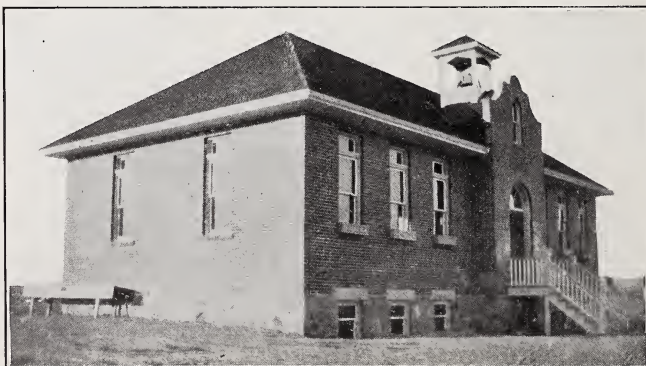


A ONE-ROOMED SCHOOL BUILDING, SASKATCHEWAN

The following is a brief description of a school building which has proved satisfactory in many districts in the province of Saskatchewan:

This building is so arranged that the light is admitted either from the north, as in plan 1, or from the north

admitted at A and then passes upward around the furnace B, being thoroughly heated before it escapes into the room. The foul air is withdrawn from the room by means of a special chimney having a foul air vent near the floor.



A TWO-ROOMED SCHOOL BUILDING, FLAXCOMBE, SASKATCHEWAN

The blackboards are hyloplate and are arranged so that the pupils facing them will have the windows on their left and at their backs.

SCHOOL EQUIPMENT

Every school room should be fur-

be provided, the desks being firmly fastened to the floors in rows with passages at least three feet wide between the outside rows and the walls of the school room.

Individual cups or a sanitary drinking fountain, also individual



A PORTION OF THE SCHOOL GROUNDS, INDIAN HEAD, SASKATCHEWAN

nished with a suitable desk and at least two chairs in addition to the teacher's, a book case and a cupboard for supplies and apparatus. For the accommodation of the pupils a sufficient number of single desks should

towels, must be provided.

The blackboard should be at least four feet wide and not more than two and one-half feet from the floor. There should be at least one hundred square feet of blackboard space.



A SCHOOL GARDEN AND SHELTER BELT, WARMINSTER, SASKATCHEWAN

The following items of equipment are essential: a dictionary; a globe; maps of the world, North and South America, Canada, British Isles; a clock; thermometer; brushes; brooms; dust-pans; crayons; and such other articles as may be required for the proper care of the school. In addition, equipment is required for kindergarten and busy work, garden tools for school gardening and such special equipment as is required for household science. If instruction is given to pupils above grade VII a little simple physical and chemical apparatus would be necessary.

NOTE:—Much of this equipment for school gardening, household science, agriculture and elementary science may be obtained by the pupils or the teacher at very little expense.

SCHOOL GROUNDS

The school grounds should comprise an area of at least two acres to afford ample space for a school garden, experimental plots and playgrounds. They should be suitably fenced and protected on the north, east and west by a shelter belt. Ornamental beds of flowers and shrubs should be laid out so as to provide a beautiful and natural environment for the pupils. A school garden of at least one-half acre should be kept under cultivation, and should be divided into individual plots for the pupils and the experimental plot, which should be used by the teacher in connection with his work in nature study and agriculture. The illustrations will indicate what can be done in the way of beautifying school grounds on the prairies of Saskatchewan.

Cultivation, or the stirring, of the soil has two functions: it kills weeds, and it helps to hold moisture in the soil. Weeds should never be allowed to get a start. Natural moisture is better than water put on with a hose or from a watering pot. Any loose material lying on the surface of the soil will prevent the moisture from evaporating in the heat of the summer sun. You can make the top layer of soil act as the protective covering by keeping it loose and crumbly. After each rain, as soon as the soil can be stirred, take a rake and break up the surface soil. This will soon dry out, and, to one who does not know, will seem too dry. But if this layer of an inch or so of dry soil is brushed off, firm, moist soil will be found underneath, and it will remain moist even during a long drought. Whether there are weeds or not, you should cultivate whenever the surface becomes packed, in order that at all times the surface soil, or "soil mulch," as it is called, may protect the under soil and save moisture.—*Cornell Rural School Leaflet.*

It is reported by the Banker Farmer that the First National Bank of Thief River Falls, Minnesota, will loan at least \$15,000.00 to farmers for the construction of silos and the loans will be made without interest. It is stated that if the farmers of that section prove sufficiently wide-awake and alert to the opportunity, the bank will not be averse to doubling the proposition, thereby standing ready to loan \$30,000.00 without asking one cent of interest. The farmer borrowing the money must be worthy and must show the proper amount of enthusiasm and interest in the venture.

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

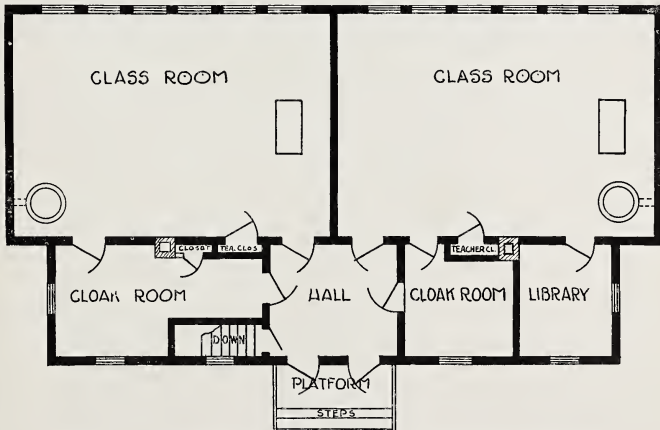
TWO MODERN COUNTRY SCHOOL HOUSES

BEFORE the country school-house can be said to be truly successful in sheltering teachers and pupils, it must attain two ends:

It must, first, conserve the health of its occupants. Without good health there can be no educational progress in any school. In fact, the improvement of health and bodily vigour of children is one of the most important functions of the school.

duced by a well designed and harmonious classroom which is attractive, cheerful and restful.

Two school buildings which may be declared unqualified successes from the standpoint of healthfulness and comfort have been completed and occupied, within a year past, in the school inspectorate of Weyburn province of Saskatchewan, Canada. The buildings are the result of the desire of two

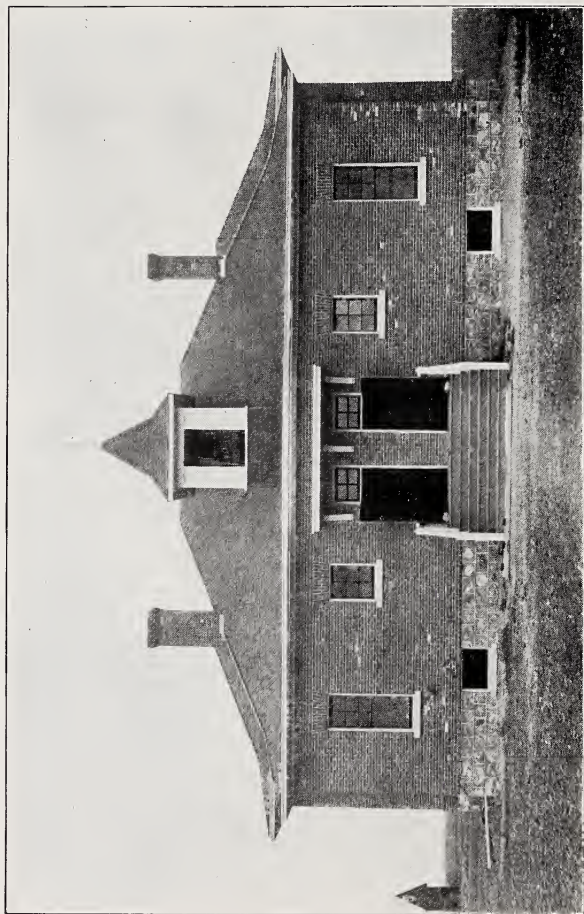


FLOOR PLAN, NEW SCHOOL BUILDING, COLGATE, SASKATCHEWAN

A second requisite of a good school-house is the comfort which it affords—not only physically but also spiritually—so that the educational process may go forward most efficiently. Under this head comes the demand for such conditions as are necessary for the actual work of instruction and study, but also those indefinable æsthetic and psychological influences pro-

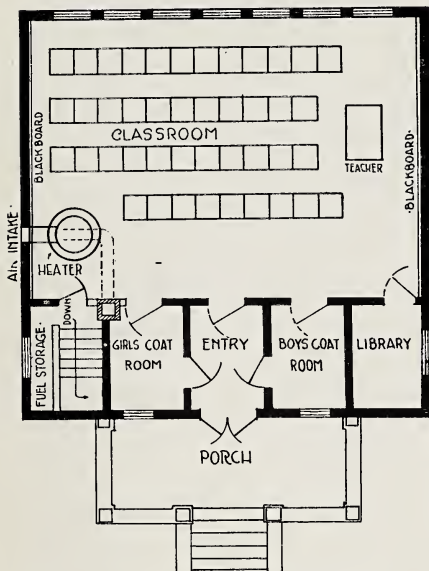
gressive boards of school trustees, assisted by an energetic inspector, Mr. A. Kennedy, M.A., to provide the most modern possible housing for their respective school children.

The building at South Weyburn is a good type of one-teacher school. It is 32 by 32 feet on the outside dimensions and contains a classroom 21 by 31 feet, arranged to seat



NEW TWO-ROOM SCHOOL BUILDING, COLGATE, SASKATCHEWAN

40 or 42 children. The basement, which extends under the entire building, has solid concrete walls, and contains a large play-room and space for future toilets. The upper walls are of brick, and the exterior is faced with red pressed brick of particularly pleasing shade. The floors, partitions, ceiling and roof are of ordinary wood construction, into which fire stops have been introduced. The roof has an unusually high pitch so that it will readily shed the heavy snows. The large porch and stairs in the front are solidly built of concrete and brick.



FLOOR PLAN, NEW SCHOOL HOUSE, SOUTH WEYBURN, SASKATCHEWAN

The classroom is entered through a large vestibule from which open cloakrooms. In one corner of the front there is a library 5 feet 6 inches by 8 feet 6 inches in size, equipped with book-shelves and a table for reading.

The classroom proper has single, adjustable steel desks and seats for 42 children. Blackboards at the front and rear are four feet high, and have been placed two and one-half feet above the floor, so that even the smallest children may use them with ease.

The lighting, heating and ventilation of the classroom are nearly ideal. The windows occupy practically an entire side, running from the ceiling to three and one-half feet above the floor. Heat and ventilation are provided by a jacketed stove which draws fresh air from a screened intake. The heat of the galvanized iron smoke pipe, which extends to the top of the chimney, creates sufficient suction in the brick flue to exhaust all the foul air from the floor line.

The building cost, approximately, \$2,600, complete.

The picture, shown on the preceding page, was taken shortly after the building was completed and does not give an idea of the shrubs and flowers which have been planted in the porch boxes and about the entire building to relieve the bareness of the school yard.

The two-room schoolhouse at Colgate, Sask., resembles in arrangement, construction and equipment the South Weyburn School. It is a plain brick building with a stone basement, artificial stone trim and shingle roof. The floors and ceilings are of wood. The basement is planned for play and toilet facilities and will probably later contain a manual training shop.

The classrooms will seat 40 children each. They are equipped with jacketed ventilating stoves; individual, adjustable steel desks and teachers' closets. Adjoining are ample cloak rooms and a library.

The building is so planned that two additional rooms can be constructed by raising the roof.

These two buildings leave little to be desired for all practical school purposes. They serve not only for the instruction of the children in the respective districts, but also are social centres for the older people, providing very necessary and helpful points of contact and co-operation. Any rural community might be justly proud of them. *From the American School Board Journal.*

HELPING THE COMMUNITY THROUGH THE SCHOOL

BY SUSAN V. POWELL, STATE ORGANIZER, SCHOOL IMPROVEMENT ASSOCIATIONS,
JACKSON, MISS.

A study of wheat or corn is more important to the boy than for him to be able to name the plants of the frigid zone. A knowledge of the history, habits, and care of live stock is worth more to him than to know the names of the huge animals that prowl through the jungles of the torrid zone. The one may be every bit as cultural as the other.

The industrial clubs for boys and girls should be made a department of the county teachers' association and the regular school work. The opportunities for correlating the school work with the club work are many and obvious. The canning club girl, who is taught how to measure accurately her one-tenth acre plot and lay it off according to direction and estimate the amount of soil she is cultivating, six or eight or twelve inches deep, is learning mensuration in a thorough and practical manner. When she keeps an exact account of the cost of her plot, including rent, fertilizer, work at ten cents an hour, and the cost of canning supplies; and from the proceeds of her club work estimates her gain or loss, she will certainly learn profit and loss, percentage and accounts in a manner she will never forget.

When she makes daily observations of her plants, the effect of rain, drouth and wind on the leaf, stem, flowers and fruit, and the diseases and pests that attack them, she is learning nature study and geography as well as practical agriculture. When she composes the written history of her crop and writes an account of her work as a club member, she prepares an English composition that calls for a knowledge of spelling, capitals, punctuation and the right use of words and paragraphing, just as if she had written on Faith, Hope and Charity.

When she learns that bacteria and spores are in the vegetables and develop rapidly and spoil the fruit unless thoroughly sterilized and hermetically sealed; when she learns of the needs for vegetables and fruits to supply a balanced ration, she is learning physiology pure and simple that she will remember when she has forgotten the number of bones in the body. When she learns the effect of light on vegetables, when she mixes zinc solder and muriatic acid to make the soldering flux, when she puts her capping steel into salamoniac and solder and find that it puts a silvery coating on the dark metal, when she studies the nature of the soil and determines what is needed in the form of fertilizer, whether lime, nitrogen or potash, she performs

experiments in chemistry that cannot be excelled for practicability or culture in any college laboratory.

When she reads the bulletins sent her by the Bureau of Plant Industry, and the farm journals containing instructive articles on her club work, she is getting the thought from the printed page instead of merely calling words without reference to their meaning, as is often done in a formal reading lesson. When she enters into the club spirit, helps to elect officers, or acts as one herself, carries out carefully the instructions sent her by those in authority, contributes the proceeds of her plot to the family income and to the wealth of her community, she is learning lessons in good citizenship and forming civic ideals that are more important than a knowledge of the meaning of gerrymandering or the substance of the eleventh amendment to the constitution.

Everything I have said about girls' canning clubs, applies with equal force to corn clubs, pig clubs or poultry clubs, or cotton clubs. Our attitude toward these industries and clubs determines their cultural value.

The industrial clubs for boys and girls are brilliant examples of the power of co-operation. The canning club work in the three years of its existence has achieved remarkable results. Beginning with only two counties in 1911, this year, thirty-three counties were organized and these club girls converted thousands of pounds of vegetable products that were going to waste into a marketable commodity; and still other thousands of gallons into palatable products for the home.

At least a score of these club girls made sufficient money from their co-operative club work to enter college, and thus saw their opportunities broaden for a useful and successful life.

These industrial clubs have changed country schools into popular social centres, not only during the school term, but throughout the vacation, when heretofore the schools have suffered most from vandalism and neglect. The club meetings bring to the school not only the boys and girls, but the mothers and fathers, to study the plans and purposes of the club work, the methods of cultivating the crops and fighting plant diseases and pests. During vacation they meet there to hold their canning demonstrations and often become aware for the first time of the needs and deficiencies of the school, and hasten to supply these. In the fall they meet there

to give reports of the work, exhibits, and judge the products and award prizes and listen to talks and addresses on practical subjects.

I have seen a group of stolid, timid country girls who were afraid of themselves and their audience, taught a lively yell which embodied the spirit of co-operation, and afterwards summoned to the canning work which they accomplished with ease and dispatch. A uniform white cap and apron adopted by the club girls and worn at public demonstrations, taught them the lesson that housework and slouchiness in dress do not necessarily go hand in hand.

We want an organization of patrons and pupils in each community under an active, interested, intelligent teacher, to crystallize public sentiment into actual school improvement. The local association should, in turn, keep in close touch with the county organization. The teacher

should be a member of it and understand thoroughly its plans and purposes. He should study these plans and modify them to suit the local conditions and translate its purposes into the needs of the individual schools. He should interest his patrons and pupils in the industrial clubs and use these as one means of vitalizing the course of study and bringing his school in close touch with the lives of the people. He should invite the extension workers and experts to visit his school and instruct his pupils in health, agriculture, etc. He should use the bulletins supplied him for supplementary work on reading, agriculture, etc. He should bring all these forces to bear on the improvement of school and community, educate his people into the habit of looking to the school for help in solving their problems and coming to the school for a discussion of these. He will thus realize the modern pedagogue's ideal of making the school the social centre of the community.

SEED GROWING CENTRES IN CANADA

BY L. H. NEWMAN, SECRETARY CANADIAN SEED GROWERS' ASSOCIATION

DURING the past ten years special efforts have been put forth throughout Canada to increase the production and to facilitate the distribution of high class seed of our ordinary farm crops. To this end the Canadian Seed Growers' Association was organized in 1904, with head-quarters at Ottawa. Until recently the membership of this association was made up of individual farmers, each of whom was required to operate what is known as a "*Hand-selected seed plot*" each year, and to select from this plot twenty-five to thirty pounds of typical heads, pods, ears or tubers, as the case might be, and with the cleaned seed obtained to sow a similar plot the following year.

After several years' experience, it was found that the number of farmers who would take this care in improving and maintaining the purity of their seed stocks was comparatively small, with the result that the amount of seed originating from these special selections was much below the demand. In order to increase this

supply the Seed Centre idea was launched in 1913.

By this system suitable districts are located for the production of a given kind of seed, and a number of farmers are then encouraged to adopt a certain variety and to grow it according to a prescribed system, so that their product may be officially recognized as "registered seed." Instead of each of these men having to operate a seed plot, they choose one of their number to do this, agreeing to pay him a certain price for a small supply of so-called "Elite Stock Seed" for multiplication next spring.

This means that these growers, with the exception of the special selector, are simply propagators of high class seed grown under special supervision, their work being inspected each year during the growing season and the seed they are offering for sale examined later. The following statement indicates the progress that has been made throughout Canada during the past few years in the organization of these centres:—

PRINCE EDWARD ISLAND

NAME OF CENTRE AND ADDRESS	VARIETY	MEMBERS
East Prince Banner Oat Club, Summerside.....	Banner oats	33
East Queen's Banner Oat Centre.....	Banner oats	11
South King's Banner Oat Centre.....	Banner oats	5

QUEBEC

Bagot County Banner Oat Centre.....	Banner oats	16
Acton Vale (Bagot Co.) Banner Oat Centre.....	Banner oats	6

QUEBEC—Continued

NAME OF CENTRE AND ADDRESS	VARIETY	MEMBERS
Champlain County Banner Oat Centre.....	Banner oats	7
Cookshire Banner Oat Centre (Compton Co.).....	Banner oats	13
Dunham Banner Oats Centre (Missisquoi Co.).....	Banner oats	6
Hartley Banner Oat Seed Centre (Stanstead Co.)....	Banner oats	14
Hillhurst Banner Oat Centre (Compton Co.).....	Banner oats	3
Lennoxville Banner Oat Centre (Sherbrooke Co.).....	Banner oats	18
Lorette Centre, Banner Oats (Quebec Co.).....	Banner oats	7
Stanbridge E. Banner Oat Centre (Missisquoi Co.)....	Banner oats	3
St. Anselme Banner Oat Centre (Dorchester Co.)....	Banner oats	10
St. Bernard Banner Oat Centre (Dorchester Co.)....	Banner oats	6
Ste. Eulalie Banner Oat Centre (Nicolet Co.).....	Banner oats	4
Ste. Monique Banner Oat Centre (Nicolet Co.).....	Banner oats	6
St. Felecion Daubeney Oat Centre (Lac St. Jean Co.)...	Daubeney oats	5
St. Felecion Banner Oat Centre (Lac St. Jean Co.)....	Banner oats	11
St. Norbert Banner Oat Centre (Perthier Co.).....	Banner oats	7
St. Prime Banner Oat Centre (Lac St. Jean Co.).....	Banner oats	11
Rimouski Banner Oat Centre (Rimouski Co.).....	Banner oats	14
Shawville Banner Oat Centre (Pontiac Co.).....	Banner oats	13

ONTARIO

Athens Banner Oat Centre, Athens.....	Banner oats	4
Brantford O.A.C. No. 72 Oat Centre.....	O.A.C. No. 72	7
Brampton O.A.C. No. 72 Oat Centre.....	O.A.C. No. 72	13
Bobcaygeon Seed Oat Centre.....	O.A.C. No. 72	9
Dumfries and Wilmot O.A.C. No. 72 Oat Centre.....	O.A.C. No. 72	6
Galt Dawson's Golden Chaff Wheat Centre.....	Dawson's Golden chaff	8
Grand River Alfalfa Seed Centre.....	Alfalfa	8
Huttonville O.A.C. No. 72 Oat Centre.....	O.A.C. No. 72	3
Lansdowne Banner Oat Centre.....	Banner oats	6
Manvers Green Mountain Potato Centre.....	Green Mountain	12
Mount Brydges Potato Centre.....	Potatoes	20
New Liskeard Pea Centre.....	Arthur pease	4
Napanee O.A.C. No. 21 Barley Centre.....	O.A.C. No. 21 barley	2
Norwich O.A.C. No. 72 Oat Centre.....	O.A.C. No. 72 oats	8
North Gower Banner Oat Centre.....	Banner oats	14
Onondago O.A.C. No. 72 Oat Centre.....	O.A.C. No. 72 oats	7
Onondago O.A.C. No. 21 Barley Centre.....	O.A.C. No. 21 barley	10
Perth Banner Oat Centre.....	Banner oats	14
Pakenham Banner Oat Centre.....	Banner oats	15
Renfrew Seed Wheat Centre.....	Marquis wheat	6
Riverfront Wisconsin No. 7 Seed Corn Centre.....	Wisconsin No. 7	11
Rockford Banner Oat Centre.....	Banner oats	7
Simcoe Dawson's Golden Chaff Wheat Centre.....	Dawson's Golden chaff	9
Smithdale O.A.C. No. 21 Barley Centre.....	O.A.C. No. 21 barley	5
Tyrrell Banner Oat Centre.....	Banner oats	16
Wellington Barley Centre.....	O.A.C. No. 21 barley	9
White Lake Potato Growers' Association.....	Irish Cobbler	3

ALBERTA

Claresholm Marquis Wheat Centre.....	Marquis wheat	10
Vermilion Banner Oat Centre.....	Banner oats	14

It will be noticed that no regular centres have as yet been organized in Manitoba and Saskatchewan. By way of explanation it may be pointed out that in these provinces the need for centres is not quite so great as in the East since grain growing is conducted in the West on such a scale that it is possible for an individual farmer to produce several car-loads of seed. In the East on the other hand the surplus grain produced is relatively small.

The names of the individual growers of the centres do not appear in the member-

ship list of the association, but rather the name of the centre. The relationship of the Seed Centre towards the association and towards the Department of Agriculture is essentially the same as that existing between the individual members and these institutions.

The directors of the association, consisting as they do of representatives from the different provinces, have agreed that the principle of local initiative and local responsibility must be recognized in connection with the operations of these bodies.

To this end provincial representatives have assumed the responsibility of organizing and supervising all centres. The fact that there are now so many districts represented by experts from the provincial departments of agriculture has made it comparatively easy to introduce and carry out this policy. The results to date on the whole are most encouraging, and those closely associated with the movement look forward to seeing the whole seed question revolutionized.

By means of this system buyers will be able to purchase in car-load lots and directly from growers if they so desire. This should make it possible for every farmer who has to buy seed to obtain seed of a known variety which is true to name, of high vitality and free from weed seeds. To seed of this class the term "registered seed" has been applied, and farmers are gradually coming to understand that this class of seed is not beyond their reach.

BOYS' AND GIRLS' COW TESTS

TO encourage the testing of milk of dairy cows in portions of the state of Iowa, where it was not practicable to organize cow testing associations, there has been inaugurated a milk record contest among the boys and girls between the ages of twelve and twenty years. The prizes given varied, and included bull calves of dairy breeds, cream separators, milk scales and Babcock testers, besides cash awards.

Any boy or girl between the specified age limits who could weigh and test the milk of three or more cows for three consecutive months, was eligible to enter the contest. The contest proper closed in three months, but the contestants were all encouraged to continue the work for at least one year in order to get the entire lactation period of each cow.

A supply of monthly record sheets, feed standards, and pamphlets containing all of the necessary directions for carrying on the work, were furnished to each contestant. They were required to furnish themselves with scales and wherever possible, with Babcock testers. In case the tester could

not be secured, the contestant was required to have the creamery or station man test the samples for butter fat not less than twice each month. At the end of each month, the records were transferred to a summary sheet and the complete data mailed to the office of the association.

The manner of grading the reports was based upon the efforts put forth by the contestants, and not on the production of the cows. In addition to the reports, an essay not exceeding 500 words describing the manner in which the work was carried on and the benefit derived therefrom was required from each contestant. Any changes which improved the rations or made the production of milk more economical, were recognized, but it was realized that the contestant had no opportunity to select the cows with which he must work.

The following score was used in grading reports:—

Accuracy, 25; number of cows, 15; neatness, 20; completeness of details, 20; essay, 20; perfect score, 100.

COMMUNITY DAIRY SHOWS

THE Education Department of the Iowa State Dairy Association have instituted a system of Community Dairy Shows. These are held in conjunction with public meetings held throughout the state. Business men in each community co-operated in making each show a success, by offering attractive cash and merchandise prizes for the best animals exhibited. The exhibits, which were secured locally, consisted of males and females of dairy cattle. They were held in lumber yards, livery stables, or such other suitable places as could be secured. Programmes were opened by leading the best cows into the ring and using them to demonstrate the essential characteristics of good productive dairy cows. After the cow demonstration was completed all the animals were led into the streets, where they were judged. It is claimed that through these community dairy shows the

man milking a few cows in outlying districts will be taught the difference between the profitable and unprofitable cow.

In some localities the rural schools were closed for the day, and the children allowed to attend the shows. The students from the country and town were assembled in the high school, where lectures were given on the importance of agricultural training with special reference to dairying. At the completion of the lectures at the high school, the students, accompanied by the instructors, were taken to the barn where the cattle for the community dairy shows were kept, and instruction was given in judging. Prizes were given to the boys and girls who competed in judging. According to the report of the Iowa Department of Agriculture, during the winter of 1914 nearly 2,000 boys and girls were reached in this manner.

QUEBEC CITY'S NEW MILK BY-LAW

AT a recent meeting of the city council of the city of Quebec, a by-law was passed concerning the control and sale of milk and cream. The bylaw provides for the appointment of milk inspectors whose duty it shall be to visit all the milk establishments, cow houses or milk and cream depositories in, and possibly outside, Quebec. They are to inspect all vehicles used for the transportation of milk and cream, and wherever it appears that the products are adulterated or unfit for consumption, or not up to the legal standard, or if there is any reason to suspect any infection, the inspectors are authorized to submit specimens to the medical health officer, and in the meantime to prohibit the sale of said milk and cream. They are authorized to keep a record of all such investigations. They have the right to visit all such places or establishments at any time they may think advisable.

The board of hygiene is given authority to periodically publish in the city papers the result of chemical and bacteriological analysis. If the milk inspectors ascertain for themselves that the milk or cream contains strange or filthy substances, they may, without any formality and without indemnity, confiscate the same and prosecute the offender. The sale of milk or cream without a previously obtained license is prohibited. The cost of the license is \$5.00. No license will be issued to milkmen residing outside the city unless they have signed a declaration by which they agree to allow the city inspectors to visit their establishments and to conform to the instructions which the inspectors shall deem it advisable to give.

Any change that he may make in the number of cows, he must supply information of to the board of health without delay. The number of the license must be posted in a visible place on all the vehicles used for the transportation or distribution of milk and cream. He must also post the number of his license in a prominent place in his establishment. The licenses are not to cover more than a year at a time.

Every milkman is required to declare the number of cows he owns and must produce the certificates of inspection before being granted his license. In the event of his getting his milk from other sources, he must also give the names and addresses of the purveyors. Any change that he may make in the number of cows, he must supply information of to the Board of Health without delay. The number of the license must be posted in a visible place on all the vehicles used for the transportation or distribution of milk and cream. He must also post the number of his license

in a prominent place in his establishment. The licenses are not to cover more than a year at a time.

Every licensed milkman is required to report on the instant to the board of hygiene, or to the milk inspectors, any case of contagion or suspicious disease which may arise in his house, or among his employees or his cattle. When any infectious disease exists in his house he cannot continue to sell milk unless a person shall have been appointed by the board of hygiene to superintend his cow house. Such person so appointed is instructed to take charge of the milking of the cows and of the sale or distribution of the milk and cream. No employee thus engaged can have access to the infected house, and can have no communication, either directly or indirectly, with the persons living in the house. This superintendence is to be continued as long as the sickness exists, and until the family physician shall have declared by a certificate that the sickness is over, and until the board of hygiene shall have issued a certificate of disinfection.

ADULTERATED OR UNHEALTHY

It is provided that no person shall sell or offer for sale or keep in his possession, milk or cream adulterated or unhealthy, or milk or cream coming from sick cows or from cows which have been fed with substances prejudicial to the quality of milk or cream. Nor shall he sell milk or cream suspected of becoming possibly a means of contagion or infection, whether the source of contagion arises from human or animal subjects, or any milk which does not come up to the legal standard, namely: 3 per cent of butter, 12 per cent of solid matter and a density of between 1029 to 1023 at a temperature of 60° F. The cream must contain at least 18 per cent of butter and the skim milk must contain 9.3 per cent of solid totals. No crude milk or cream must contain more than 500,000 bacteria per cubic centimetre in summer or more than 250,000 in winter.

All milk and cream sold or exposed for sale contrary to the provisions of this bylaw may be seized and confiscated by the milk inspectors or any health officer, and the license of the involved person forfeited. No person shall sell or offer for sale any milk from which some important constitutive element shall have been extracted, or which shall have been diluted with water. Nevertheless skimmed milk may be sold in cans bearing on their outside the word "skim" in letters of at least two inches in height, providing it is delivered in measures similarly stamped. It is forbidden to sell

any milk or cream to which any preservative or any other foreign substance shall be added. No milk or cream shall be sold during the sale of thirty days preceding parturition and for at least ten days following the same. Milk or cream coming from cows suffering from any disease must not be sold as long as such sickness shall last or convalescence therefrom. Any proprietor of milk cows suffering from disease shall at once notify the board of hygiene.

SANITARY PREMISES

The cow house of a milk or cream producer must contain only cattle of the bovine race. Hogs, fowl or other animals, except the horse, must be proscribed from the house stable. The cubic space of air shall be at least 600 feet for each cow. The cow house shall be lighted by windows the glass surface of which must be equal to at least one-tenth of the surface of the floor. The floor of the stable must be water-tight and must be inclined towards a little ditch. The said ditch shall be connected with a drainage pipe inside the stable. All drainage pipe connections must be provided with safety valves. The inside walls of the stable must be washed with lime at least once a year unless they be painted with oil, when there must be a complete washing. Manure must be taken out at least twice a day and removed at a reasonable distance approved by the Inspector.

Care must be taken in milking and handling, and the utensils used must be kept free from impurities. If accidentally the milk is soiled such milk must not be delivered to customers. The utensils employed for the milking must be brought into the stable at the last moment and carried out immediately after.

All dairies must be separated from other apartments. They must be fifty feet away from any stable or pig house or from any pile of manure or refuse. The windows of such dairies shall be protected by fly-nets from the first of May to the first of November. All the cans used in the dairy must be employed exclusively for that purpose, and must be cleaned and washed after every service and rinsed with boiling water previous to using them again.

IMPLEMENT CLEANLINESS

The milk or cream may be pasteurized twelve hours in summer and eighteen hours in winter after the milking and must be delivered in the twenty-four hours after their pasteurization. Bottles or cans collected from consumers must be washed in boiling water at the establishment of the milkman. Such establishments must not be used for any other purpose than for milk. Bottles or other utensils taken from houses where any contagious disease

exists must not be taken possession of before they shall have been disinfected under the authority of the Board of Hygiene.

Between the first of May and the first of October it is forbidden to allow cans filled with milk or cream to stand out on the platforms of railways or other transportation companies longer than fifteen minutes unless such cans shall have been under cover from the sun. At the point of destination all cans not yet cleaned within half an hour must be placed in an ice-house or under cover from the sun. The empty cans must be washed by the sender before being deposited in the city stations to be sent to the country. All cans shall be exhibited on demand to the representative of the board of health, and, if in his opinion, they have not been sufficiently washed, they shall be used as exhibits before the courts of justice or be washed at the expense of the sender.

Every proprietor of milk or cream depository where milk or cream is sold must see that the said milk or cream is kept in an ice-house. The milk or cream must be kept in the can in which it has been brought, unless the municipal board of hygiene shall have permitted otherwise.

The well from which the water is taken for the cows must never be dug under a stable. It must not be at a less distance than fifty feet away from any stable, or pig house, or from any pile of manure or refuse, unless such well be an artesian well or tubed, with the approbation of the board of hygiene.

When a cow house or dairy is not kept in conformity with the prescriptions contained in the bylaw, the municipal veterinary surgeon, or the veterinary surgeon authorized by him, must prohibit the sale or distribution of milk or cream coming from such establishment.

THE TUBERCULINE TEST REQUIRED

Every cow brought into the city, or kept to be sold or utilized for milk, must be first brought to the cow stable kept by the city, or to such other place appointed for that purpose by the city engineer. Every cow must be submitted to the municipal veterinary surgeon to be subject to the tuberculine test, or to some other medical or scientific process suitable to ascertain if such cow is affected with tuberculosis, and if its milk is fit for domestic usage or to be used as an alimentary substance. On Tuesdays and Wednesdays of each week the veterinary shall, in the said cow stable, submit to the test each cow brought in to be sold or utilized. If the owner of the cow wishes to have it inspected on any other day he may have such test made by the veterinary at his own expense. If the cow is found unfit it

must be removed outside the city limits or slaughtered forthwith. If the cow is found healthy and fit, a certificate to that effect must be delivered to the purchaser or owner. No person in the city shall sell or purchase any cow that has not been subject to inspection and submitted to the tuberculine test, and unless a certificate has been issued setting forth the fact. The certificate is only good for six months, to be computed from its date. Every year from the first of May to the first of July each milkman is bound to produce to the board of hygiene the proof that he holds a certificate of the nature described. Any milkman failing to conform to this regulation shall be held to have been guilty of violation of the bylaw. In the case of cows kept outside the city the tuberculine test must be applied by the municipal veterinary, or by the veterinary authorized by him, and at the expense of the owner. If bacilli of tuberculosis is found in the milk such certificate shall be cancelled.

All milk shall be considered as fresh milk which has been milked within eight hours from the moment when it is delivered

to the consumer, and such fresh milk shall be put in cans showing at a visible point in letters not less than one inch long the stamp "fresh milk." The milk which has been drawn since more than eight hours may be sold in cans, bottles or flagons, not stamped as in the past.

The cans employed by persons selling milk must not carry an added neck but must have at the top only an opening wide enough to allow facility for cleaning. Such opening must be closed in the distribution of milk to the consumers, but cans carrying five gallons or more may have a wide neck of not less than three inches in diameter, the opening of which shall be closed with a recipient of lead setting therein.

Any person found guilty of any violation of the provisions of this bylaw is liable to a fine not exceeding \$100, and, in default of payment, to imprisonment for a term not exceeding three months. The license or permit of any such offender may be suspended or finally cancelled by the medical health officer, or any officer holding authority from the board of hygiene.

SOCIETIES AND ASSOCIATIONS

THE HOLSTEIN-FRIESIAN ASSOCIATION

Mr. W. A. Clemons, Secretary of the Canadian Holstein-Friesian Association, reports that during the month of June the records of 52 cows and heifers were received and accepted for entry in the "Record of Merit."

Mr. Clemons also reports 28 cows and heifers qualified for admission to the "Record of Performance" during the month of June. Four of these exceeded 20,000 pounds of milk for the year. In the mature class, Lillie DeKol Lucknow leads with 22,189 pounds milk and 1,051.25, pounds butter. The record for butter is the largest yet reported for a cow qualifying under the R. of P. test, displacing that of May Echo, whose photograph and record were published in the June number of THE AGRICULTURAL GAZETTE.

PRINCE EDWARD ISLAND SHEEP BREEDERS

The annual meeting of the Prince Edward Island Sheep Breeders' Association was held in Charlottetown on July 22nd.

The report of the secretary showed a balance on hand of \$40.

For the year ending June 30th, 1915, 2,158 grade sheep and 315 pure bred sheep had been insured against destruction by dogs. Two claims had been paid amounting in all to \$1.00.

In conjunction with the Department of Agriculture sheep dipping demonstrations had been held in Queens and Kings counties and about 7,500 sheep dipped.

The experiment in the co-operative marketing of wool carried on in conjunction with the Department of Agriculture resulted in 5,616 $\frac{1}{4}$ lb. being marketed. The finest grades brought 33 $\frac{1}{2}$ ¢., second grades 33¢., lustre 32 $\frac{1}{4}$ ¢., black and rejects 25¢., tags 17¢., The total amount received for the wool was \$1,798.80. The total expense in connection with it was \$29.12 or a little less than $\frac{1}{2}$ ¢. a pound.

According to the constitution two directors go out each year. The lot this year fell on Michael Keenan of Georgetown and J. M. Laird, Kelvin. The officers for the following year are, C. B. Clay, Bridgetown, president; Albert Boswall, 1st vice-president; C. M. Arseneault, 2nd vice-president; Ernest Lund, Daniel Stewart, Rev. Dr. Gauthier, directors. According to the incorporation act the secretary of agriculture is secretary.

Considerable discussion took place regarding the work for next year. It was decided to carry on the co-operative marketing of wool more extensively and arrangements were proposed for the forming of local associations all over the province. The name of J. M. Laird, the retiring president, was proposed as markets' manager for the association.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF FIELD HUSBANDRY

Division of Field Husbandry: Summary of Results, 1914; Bulletin No. 83, prepared by W. L. Graham, B.S.A., Assistant to the Field Husbandman, and the Superintendents of the Branch Experimental Farms and Stations. This Bulletin treats and advises on the Rotation of Crops, gives tables showing the cost of production, the results of shallow ploughing and subsoiling as compared with deep ploughing, and the values of different fertilizers. It also details the weather conditions and results of experiments in cultivation at the different experimental farms and stations.

THE FRUIT BRANCH

Fruit Crop Report, No. 2, July, 1915, directs attention to the iniquitous practice of some shippers in sending out strawberry boxes only half or three quarters full. It furnishes reports of the growing fruit situation up to June 28th from Quebec, and the Okanagan Valley, B.C., Lambton County, Ont., the Annapolis Valley, N.S., Oshawa, Ont., Winnipeg, Man., Oregon, Georgia, and Sudus, N.Y. Reports of the apple prospects are given from ten districts covering the entire country. British Columbia promises an average crop, but generally the apple crop will be much lighter than last year. Frost did considerable damage to small fruits, the decrease in which compared with 1914 will run from 35 to 60 per cent. Peaches promise well. A note in the report states that the British war office will require large quantities of jam this year and Canada will be afforded an opportunity to fill orders. No jelly will be required and no mixed jams will be accepted.

THE ENTOMOLOGICAL BRANCH

"Applied Entomology in Canada; Its Rise and Progress" is the title of a 15-page reprint of the address delivered by C. Gordon Hewitt, D.Sc., F.R.S.C., Dominion Entomologist, as president of the Entomological Society of Ontario at the fifty-first annual meeting of the Society last year. Notice of the address, which was of a most comprehensive nature, dealing with the work that was being done in the suppression of all varieties of insect pests, both by the provinces and the Dominion, appeared in THE AGRICULTURAL GAZETTE for June.

Hessian Fly Ravages. A special circular recently issued by the United States Department of Agriculture reports that the Hessian Fly has inflicted immense damage during the past season to the wheat crop throughout an area which, in the north-east, includes the states of Illinois, Indiana, Ohio and Pennsylvania. "The loss to the 1915 wheat crop," the circular states, "will undoubtedly amount to millions of bushels." It is not unlikely that some damage from the Hessian Fly will occur in certain sections of south-western Ontario and the notice has been published with a view to drawing the attention of farmers to this fact in order that outbreaks of this pest may be reported and that steps may be taken to protect the wheat sown in September and October. *No wheat should be sown in August.* The Dominion Entomologist, Department of Agriculture, Ottawa, will be pleased to hear from farmers who have experienced Hessian Fly damage this season and will examine suspected plants. All communications and samples up to 11 ounces in weight so addressed may be mailed "free," and the assistance of the Entomological Branch is at the service of every Canadian farmer.

THE LIVE STOCK BRANCH

Ayrshire Records. The Canadian Ayrshire Breeders' Association have issued a booklet of milk records made by Ayrshires. The records have been revised up to May 1st, 1915. A summary shows that 168 mature cows gave a yearly average of 10,234.44 pounds of milk, 411.43 pounds of butter fat; 53 four-year olds gave 9,276.20 pounds milk, 376.79 pounds butter fat; 102 three-year-olds gave 8,276.38 pounds milk, 343.46 pounds butter fat; 244 two-year-olds gave 7,489.03 pounds milk, 306.42 pounds butter fat. The little brochure is illustrated with pictures of champion cows, including Milkmaid 7th, holder of the Canadian record at 16,696 pounds milk, 729 pounds butter fat. It also gives the scale of points for excellence of both bulls and cows.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE

PRINCE EDWARD ISLAND.

A circular issued by the Prince Edward Island Department of Agriculture announces competitions in fields of standing grain. Three competitions are to be held in each county, fifteen prizes ranging from \$10 to \$2 being given for oats, seven for wheat ranging from \$8 to \$2, and four for barley ranging from \$6 to \$2. The circular gives rules and regulations and plan of judging.

QUEBEC

The Annual Report of the Pomological and Fruit Growing Society of the province of Quebec for 1914 is a publication of 183 pages. It details in exactness the proceedings at the annual summer meetings of the society held in the town hall, Abbotsford, September 9th and 10th. A number of instructive addresses are embodied in the report regarding the care of orchards and the care and cultivation of fruit trees and bushes. Much valuable information is furnished on spraying, packing, transportation, preserving and co-operation. A memorial notice of the late Dr. Wm. Saunders and a list of awards in various competitions close the report.

The Educational Record is a quarterly publication through which the Protestant Committee of the Council of Public Instruction communicates its proceedings and official announcements. Nature Study and Elementary Agriculture receive considerable attention. Articles are given on "The Rural School Library," "The Educational System of Rural Denmark," on Forestry and similar subjects. Reports of the Inspectors are also published along with a variety of official information.

Appearance of Crops in Quebec. A bulletin issued by the Provincial Department of Agriculture furnishes information on the condition of the crops in the province up to July 10th. The appearance of the crops is described as very good, being 80 per cent, the same as last year, against 79 in 1913 and 77 in 1912. There were 186 hours of sunshine in May and 226 in June. Potatoes, oats and barley showed 82 per cent, wheat, Timothy hay and other crops about 80 per cent. Tobacco and flax make the poorest showing, or only 78 per cent. Reports from every district and from the fruit stations are given.

The Maple Sugar and Syrup Industry. Circular No. 2, Department of Agriculture. "Many people will be surprised to know," says this circular, "that our sugar bushes yield annually more than our orchards." According to the last census, the province of Quebec produced in 1910 9,427,694 pounds maple sugar and 984,282 gallons of maple syrup, for a total value of \$1,680,393. For the same year the total value of the fruit crop was only \$1,469,537. The circular deals with the sugar-making schools established by the Quebec Department of Agriculture, the free distribution of samples of sugar, the legislation passed to protect the industry and ends with a few practical hints for sugar-makers.

Natural Incubation and Rearing. A circular of eight pages published by the Quebec Department of Agriculture and

giving practical advice on natural incubation, choice of setting hens and care and feeding, care of the chicks at hatching time, etc.

The Profitable Feeding of Poultry. Circular No. 7 issued by the Quebec Department of Agriculture. A practical circular of four pages on the feeding of poultry, emphasizing the value of green fodder.

Fattening Poultry. Bulletin No. 5 of the Quebec Department of Agriculture. This bulletin of eight pages contains fairly complete information on the crate-fattening of poultry. The following are dealt with: Making of crate, feeding, preparation to fattening, results of an experiment on twelve chickens fattened in a crate, preparation of chickens for the market, plucking, packing for the trade.

Ten Years' Practice and Experiments on Poultry. A text-book on poultry keeping specially adapted to the conditions of the province of Quebec, prepared by the Poultry Manager at the Oka Agricultural Institute and published by the Quebec Department of Agriculture.

This bulletin of 127 pages is the result of ten years' experiments and observations and should be a very useful and very valuable guide for the Quebec breeder.

ONTARIO

Report of the Minister of Agriculture, 1914. In the letter of submittal to the Lieutenant-Governor, Hon. J. S. Duff, Minister of Agriculture, in the annual report of his department, refers to the war and to the gift of 250,000 bags of flour for relief of the Belgians in England. In response the town council of Hackney sent a formally drafted resolution, inscribed on parchment and bearing the town seal, thanking the government of Ontario for its gift. A facsimile of the document forms page 4 of the report, the frontispiece being a photogravure of the interior of the new dining hall at the Ontario Agricultural College. An analysis of the general operations at the college follows, succeeded by a summarised review of the work of the District Representatives. Reference is made to the admirable work being done in connection with the rural schools. Some account is given of the taking over for actual occupation of the new premises of the Ontario Veterinary College, now in close affiliation with the University of Toronto. Owing to the demands of the war, there was a decrease of the number of students from 373 in 1913-14 to 334 in 1914-15. Statistics relative to bulletin distribution show that a total of upwards of 600,000 copies of different publications were circulated. Reviews follow of the work of the agricultural

societies, live stock organizations, Farmers' and Women's institutes and the fruit branch. Suggestions are outlined for the governing of rural fairs and for prize competitions in sowing, reaping, ploughing and judging. Particulars of efforts to combat the inroads of the army worm and the grasshopper and advice as to the cultivation of alfalfa are worthy of attention, as is also some excellent information on the use of electricity on the farm and some facts regarding co-operation and marketing. Reports on the Monteith Demonstration Farm, on Colonization and Immigration, on Factory Inspection and the Stationary Engineers' Branch complete an eighty-page blue book.

Ontario Agricultural College Annual Report, 1914. The fortieth annual report of the provincial agricultural college and experimental farm at Guelph shows some change in its make-up. Instead of as in former years, containing particulars of all the work undertaken by the college, the present report presents a general review of the operations of the past year, leaving special matters to be dealt with in periodical bulletin form. The president, Dr. G. C. Creelman, gives some account of an authorized visit paid by him in the fall of the year to New Zealand and Australia. As well as dealing briefly with agricultural matters in those colonies he refers to the state of similar affairs in China and Japan. His conclusion is that having regard to everything, comparisons generally favour Ontario, "where the blanket of snow and the keen frost prevent the leaching of fertilizers from the soil through a greater portion of the year and where more vigorous climatic conditions require keener, more robust constitutions for dealing with the situation." Tribute is paid in the report to the good work being done by district representatives, who are all graduates of the college. Emphasis is also laid upon the excellent results being derived from agricultural instruction in the rural schools and by means of the short courses. Details are supplied of the methods adopted in this connection, of intentions for the present year, and of the attendance at the courses. A five-page synopsis of the work of the college is of special interest, dealing as it does with the efforts made to check the onward march of the army worm, the suppression of fruit diseases and of weeds, experimental orchard work, winter injury to fruit trees, study of soils, researches as regards field crops, animal husbandry matters and kindred subjects. Particulars of the Macdonald Institute courses in household science, with names of successful students, and the financial statements of the college, comprise the balance of the report.

Women's Institutes, Report for 1914, Part 1. The fact that it has been found necessary to divide the annual report of the Women's Institutes of Ontario into parts indicates the important place the institutes have come to play in public welfare. There were at the close of 1914, 843 of these institutes with a membership of nearly 24,000 women. Part 1 comprises 167 pages, containing statistical statements showing the strength and work of the movement, by which it would appear that the exact membership up to December 31st last was 23,689, the number of meetings held 8,502, and the total attendance 202,502, an average for each meeting of within a fraction of 24. It would seem that Halton, with a membership of 525, is the strongest institute district and Haldimand, with its 232 meetings and an attendance of 5,440, the most active. East Northumberland can, however, lay claim to the best average attendance with 39 for each meeting, East York following close after with 38. The total receipts of the institutes amounted to \$65,048 and the expenditure to \$42,185, leaving a favourable balance of \$22,863. East Hastings can boast the highest receipts with \$1,855.19 and the highest expenditure with \$1,606.61. East Lambton was seemingly the most economical, having a balance of \$817.34. Addington with 22, South Norfolk with 23, East Nipissing with 24, and Russell with 28 are the smallest in point of membership. A list of district officers is given along with announcements for the current year and typical programmes of monthly meetings. A review of the activities by the Superintendent precedes verbatim reports of the Eastern Convention at Ottawa, the Western Convention at London, and the Central Ontario Convention at Toronto in 1914 and the annual general convention at Toronto in 1913. Addresses are included by leading ladies and by the Dominion Minister of Agriculture, the Premier of the Province, the Provincial Minister of Agriculture, Sir Adam Beck, Dr. C. C. James, Principal Falconer, Dr. J. A. Amyot, Prof. R. W. Graham, and Venerable Archdeacon Cody. A series of selected papers conclude the report.

Bee-Keepers' Association Annual Report, 1914. There is a large fund of information in the 35th annual report of the Ontario Bee-Keepers' Association. A feature of the report is the spirit of hopefulness that marks it, despite the disappointingly short crop of last year. The president in his opening address urged beginners to persevere. At the same time he and other speakers denounced the policy of booming the avocation, as those already in it often experienced difficulty in making the business profitable. Discussions are recorded on many matters of interest, such as the destructiveness of the

King Bird, the value of the smoke introduction of queens, ways of improving the crop of honey, the advisability of giving a comb with eggs or larvæ in a hive with an unfertilized queen, the inroads of European foul brood, the best manner of putting up exhibits, sweet clover as a bee food, the transportation of hives, the wintering of bees and a variety of kindred subjects. Several subsidiary reports and a number of practical addresses by leading authorities are given.

Fruit Branch Circular, No. 28, issued by the Ontario Department of Agriculture gives reports of the fruit prospects in June and advice on "Care of the New Strawberry Bed." It gives the "fruit pests that can be controlled now" as Cherry Fruit Fly, Pear Slug, Brown Rot of Peaches, Plums and Cherries, and Pear Blight. The circular is supplied free on application to the Branch.

Ontario Veterinary College Calendar, 1915-16. The calendar besides setting out the range and method of studies gives a brief history of the College from its foundation, list of students and graduates and also illustrations of operations.

MANITOBA

Report on Crops, Live Stock, Etc. This is Bulletin 91 of the provincial Department of Agriculture. Frost in the early part of June damaged fodder corn and garden vegetables but only slightly checked the grain crops. Dairying was in a healthy condition. Creamery butter increased from 2,931,138 pounds in 1912 to 4,761,355 pounds in 1914, and dairy butter decreased in the same time from 4,333,905 pounds to 3,889,000 pounds. Cheese decreased from 536,618 pounds to 471,355 pounds. The area under wheat in 1915 is 3,664,281 acres against 3,366,200 acres last year, Oats, barley and flax all show an increase: Rye and peas a decrease. Potatoes show an increase from 60,484 acres in 1914 to 67,343 acres in 1915. Timothy, clover and alfalfa show increased acreage but Brome grass, Rye grass and fodder corn show a decrease. Horses in the province are returned as 329,994 against 325,207 in 1914; cattle as 631,005 against 498,040; sheep as 76,577 against 75,100 and pigs as 286,433 against 325,416.

SASKATCHEWAN

The Eighth Annual Report of the Secretary of Statistics contains review of the crop conditions and live stock situation in 1914, the average yield for ten years, details of marketing, shipping, wages and prices, particulars regarding population, enumerating

tables for seven years of live stock, and a large amount of meteorological data. All classes of live stock showed a slight increase in 1914 compared with 1913.

BRITISH COLUMBIA

Poultry House Construction. This is Bulletin No. 63 of the Live Stock Branch. The contents of the 40-pages of which it consists, are well indicated in the title. Illustrations of buildings, finished and in partition, diagrams and details of measurements, take the greatest amount of space, but the descriptive text is full and enlightening.

The Twenty-Fifth Annual Report of the British Columbia Fruit Growers' Association for 1914, recently issued, bears testimony to the good results derived from the "apple weeks" that were held late in the fall. Following them a marked increase was noticeable in the demand for British Columbia fruit and a corresponding decrease in the call for the imported article. Development of the fruit trade with Australia and New Zealand is also noted. A specially appointed committee reported strongly in favour of an extension of the advertising system. The report supplies in detail the proceedings of the association at its annual convention, and the addresses in verbatim of the president, Mr. W. C. Ricardo, Mr. F. W. Peters on the Transportation Problem, Sir Richard McBride (the Premier), Mr. R. Robertson of Vernon, on Co-operation in the Okanagan Valley, Hon. Price Ellison on the Progress of the Fruit-Growing Industry, and Mr. W. E. Scott (Deputy Minister of Agriculture) reviewing the situation as regards the fruit business and calling for the slogan of "Canadian Fruit for Canadian People."

Proceedings of Entomological Society. This 48-page grey-covered book contains reports in detail of the meetings of the British Columbia Entomological Society at Kelowna, B.C., in August, 1914, and at Vancouver, B.C., on January 16th, 1915, the first being the second mid-summer meeting and the latter the fourteenth annual meeting. A deal of information is given on the ravages of many pests and of the most advisable means to be used in their repression. Papers by several expert officials of both the province and the Dominion increase the value of the publication.

MISCELLANEOUS

Agricultural Statistics, 1914, Vol. 49, Part 1, gives the acreage and live stock returns of England and Wales, with summaries for the United Kingdom. It shows a decrease of 15,378 acres under crops and grass compared with 1913, but

the decrease is considerably less than the annual average of the last ten years. Horses had decreased 2,599, the number being 1,399,547 in 1914 as compared with 1,402,146 in 1913. Cattle showed an increase of 161,500, the numbers being 5,877,944 in 1914, and 5,716,944 in 1913. Sheep were 17,259,694 in 1914 against 17,130,286 in 1913, an increase of 129,408; swine were 2,481,481 in 1914 and 2,102,102 in 1913, an increase of 379,379. Wheat showed a slight increase and barley and oats slight decreases.

The Report of the Newfoundland Agricultural Board for the year that ended December 31st, 1914, is a red-covered 72-page publication giving full accounts of the operations of the Agricultural societies of the Island in conjunction with the Agricultural Board. The Board supplies the societies with all kinds of seed and pure-bred breeding stock. It also conducts sales. Instruction is given in the report relative to the checking of pests, the suppression of disease and the care of live stock. There were 9,000 horses, 16,463 cattle, 39,124 sheep, 6,193 pigs on the Island in 1914, the returns in every case showing an increase over those of 1913.

The 388-page report of the Proceedings of the Seventeenth Conference for Education in the South and Twenty-fifth annual meeting of the Southern Educational Association gives a great deal of space to the progress that is being made in agriculture in the Southern States. Short courses and rural school systems are in active operation.

"Training" is the title of a publication issued monthly at Toronto by the Ontario Association for the Promotion of Technical Education, that has for its object the encouragement of training for economy and efficiency in Industry, Artistry, Commerce, Agriculture, Homemaking and Practical Processes. The June number quotes the resolution on Technical Education and Scientific Research passed at the recent convention of the Canadian Manufacturers' Association and gives articles on "Organization of Training Co., Limited," "New Kind of Country School," "Child Training by Nature's Methods," "Thrift in the Use of Time," "Training Through Public Libraries," "To Make Teachers National Leaders," and "The Farmers' on the Job."

NOTES

Low temperature and lack of rain have resulted in a hay crop below the average in England.

There are close upon 12,000 credit associations in Siberia, with an aggregate capital of \$150,000,000, which work in conjunction with the still more numerous peasant co-operative societies.

Speaking of the prospect for Canadian eggs in Britain, a prominent provision firm writes:—"It is impossible to speak with any degree of certainty about the future, as it depends entirely upon the supply which may come from Russia. If we have a limited quantity we shall want every egg that Canada can ship us."

During nine months of the year extending from September, 1914, to May, 1915, Canada shipped 697,740 boxes of butter to England against 611,135 boxes in the corresponding period of 1913-14.

The Salmon River Valley (B.C.) Women's Institute held, in July, an annual flower show with prizes for bulbs, sweet peas, roses and perennials. In conjunction with the flower show there was also held a picnic.

At a meeting of the Dundee Markets Committee a letter was read from the Glasgow Corporation urging co-operation in securing the removal of the embargo on Canadian cattle. The movement was heartily endorsed.

The executive of the Canadian National Exhibition, Toronto, has arranged with the Veterinary Inspector General to have all the stables, stalls and sheds thoroughly inspected prior to the receiving of exhibits. The Ontario government will conduct an independent inspection. This extra precaution is being taken because of the occupancy of the buildings and grounds for some months back by the militia.

In Georgia, business men this year have given \$25,000 for boys' corn clubs, \$8,000 for girls' tomato clubs, and the city of Atlanta has given an additional \$10,000 for the annual corn show—a total of \$43,000 voluntarily contributed, which supplements an equal amount from the Federal Government.

Potatoes can be transformed into power. A startling enough thought, yet susceptible of demonstration. A good quality of alcohol can be made from potatoes, and alcohol, when denatured, can be used for fuel for automobile and similar engines. If rightly employed, a potato field could generate the power required to pump the water for its own irrigation; or to run the machinery used in its cultivation, and in hosts of other ways.—*The Maine Farmer*.

The chief timber-producing countries of the world have the following percentage of territory under forest:—Sweden, 52.2; Russia, 43; Germany, 25.9; Austria-Hungary, 29.6; France, 15.6; United States, 33.6; Canada, 22.3. Australia has the smallest area of timber forest in proportion to her total land surface. Some statistics give the forest area at over 100,000,000 acres, or about 5 per cent; but the Victorian Conservator of Forests believes that estimate to be excessive.

At a meeting of the Eastern Ontario Winter Fair Board the dates for the next show, which will be held at Ottawa, were set for January 18th, 19th, 20th and 21st, 1916. The following are the officers: President John Bright, Live Stock Commissioner, Ottawa; vice-president, J. B. Ferguson, Renfrew; general director, R. W. Wade, Chief of the Live Stock Division, Toronto; secretary-treasurer, W. D. Jackson, B.S.A., District Representative, Carp.

In the state of Maine there is in operation a Farmers' Union which is already accomplishing great results for the farmers of the state. The Farmers' Union is a successor to the Grange, which demonstrated in a less degree the value of co-operation. The Farmers' Union has organized a Union Grain Supply Company, a Union Distributing Company and a Shipping Union. For these purposes it has warehouses and grain houses and is establishing Union grocery stores. The following table, taken from "*The Maine Farmer*", shows the progress made by the Union in the three years of its existence:—

At the annual meeting of the United Fruit Companies, Limited, of Nova Scotia, held at the end of June, the following officers were elected:—President, John Donaldson, Port Williams; vice-president, F. W. Bishop, Paradise; secretary, A. E. Adams, Berwick.

The advertising campaign conducted under the auspices of the British Columbia Fruit Growers' Association is having a success beyond expectations. Recently, Apricot Week was advertised in 14 papers in Edmonton, Regina, Lethbridge, Moose Jaw and Medicine Hat, and prizes of British Columbia fruit offered to housewives for the best tried and tested apricot recipe. A feature is being made of preserving fruit without sugar, special prizes not only being offered for samples but also for the best 250 or 300 word stories descriptive of experience in this direction. It is stated that the advertising with that of the Fruit Booklet is inducing hundreds to put up fruits without sugar. It is anticipated that this shall lead to a greatly increased demand for British Columbia fruit, as the trade will agree that preserving is being checked by the high price of sugar.

Large orders for oats have gone from New Zealand to the United States, notwithstanding the published wish of New Zealanders to deal within the Empire. The result has not been satisfactory. The oats were examined by an expert in the presence of the United States consul. The result of the examination is to the effect that the oats are not suitable for seed purposes; that they contain a large quantity of "darnell," also a percentage of weed known in New Zealand as "catch fly," together with a proportion of wild turnip and thistle. The expert also reports that there was a distinct musty smell through the shipments. These samples were taken from the entire shipment. Had quotations arrived from Canada, the orders would have been secured, prices being right. At all events the New Zealand importer is not in favour of importing oats from the United States.—*W. A. Beddo, Trade Commissioner in New Zealand*.

	1912	1915
Farmers' Union of Maine.....	No funds	\$ 7,358.02
Farmers' Union Grain & Supply Company.....	Nothing	252,000.00
Farmers' Union Distributing Company.....	Nothing	84,146.50
Penobscot Valley Shipping Union.....	Nothing	160,000.00
Business of the Local Unions.....	Nothing	750,000.00
Total.....		\$1,253,504.52
Warehouses.....	None	22
Grain houses.....	None	15
Grocery stores.....	None	3

The great drought that had prevailed in Australia for many months was broken in the second week of May by a copious downfall of rain, so much as five inches being recorded in some localities as falling in 48 hours. In less than seven days more rain fell over vast areas of country than during the whole of the previous year. In September or October spring rains will be required to ensure what is expected to prove a bumper harvest.

The Toronto Association for the Cultivation of Vacant Lots, of which Chief Justice Sir William Meredith is president, intends to raise \$2,000 for the prosecution of the work next year. In conjunction with another organization known as The Rotary Club, the association is supervising the tilling of twenty-two acres of vacant land in various parts of Toronto, which has been divided into 200 garden plots. It is estimated that the vegetables grown will be worth \$300 per acre.

In the State of Kentucky a system of Demonstration Public Schools has been placed in operation. In each of ten counties ten of the best schools were selected as demonstration schools. In selecting the schools there was a special attempt to secure schools that might at some future time be consolidation possibilities. The schools selected represent various types of environment. When the work was commenced the ten teachers for each county were brought together for a consideration of the whole plan. Each of the schools planned to take on one or more of the new things which had been proved worth while. These features would be the improvement of the school grounds, improvement of sanitary conditions, introduction of sewing or other industrial work. The one hundred schools were in close touch with their county Superintendents and also with the rural school Supervisor. Reports were made every month and from these a composite report was made and sent to all the teachers. The great function of these schools is to show the people and the teachers how some things can and should be done.

A qualified apiary instructor has been sent on tour by the Ontario Department of Agriculture to show how to examine hives for disease. He actually puts a colony through the treatment for cure. Other manipulations are shown, such as finding the queen, removing bees from supers, operating to prevent swarming, etc., etc. Prominent local beekeepers are asked to take part and assist in the discussion of practical questions. Ladies were especially invited, and were advised to take veils so that they could go right out into the apiary with comfort.

Dr. Paul Reinch, United States Minister to China, recently returned to Madison from the Orient, says that the thing that impresses him most in China is the wonderful ability of the people to make the land that has been cultivated for centuries keep on producing crops. He remarks that agriculturally, the people of China cannot be excelled, and that great sections of the country are as yet practically untouched or undeveloped. He says the popular impression that China is overpopulated is not true, as the Chinese, by extending their agricultural operations over unused lands could largely increase their population.

A model dairy farm for the purposes of demonstrating rotation and the value of alfalfa and corn for ensilage will be one of the features of the Ontario Government dairy exhibit at the Canadian National Exhibition, Toronto. It is intended to have an unusually large and representative showing of Ontario dairy products. The Niagara Fall of milk will again be a feature, the flow showing the production of milk in the province and the proportion into which the total is divided for cheese and butter making, city consumption, etc. There is a large increase in the number of requests for entry forms from the dairy schools of Quebec.

INDEX TO PERIODICAL LITERATURE

- Manure and Fertilizers,
The Saskatchewan Farmer, June, 1915,
page 15.
- Wild White Clover,
The Scottish Farmer, Glasgow, June
26th, 1915, page 569.
- On the Trail of the Soft Fruits Market,
F. S. Jacobs, B.S.A., *Farm and Ranch
Review*, Calgary, July 5th, 1915, page
405.
- My Impressions of the West,
Peter McArthur, *Farmer's Advocate*,
Winnipeg, July 7th, 1915, page 807.
- The West's Terminal Elevators,
Canadian Finance, Winnipeg, July
7th, 1915, page 439.
- Canadian Horses for the War,
Farmer's Advocate, London, July 8th,
1915, page 1093.
- Valuable Work of the Experimental Farm
at Lacombe, Alberta. Green Oats as an
Ensilage Crop may replace Corn.
H. Higginbotham, *The Grain Growers'
Guide*, Winnipeg, July 7th, 1915, page
(1041) 9.
- War and Wheat Production—An English
Opinion,
Farmers' Advocate, Winnipeg, July
14th, 1915, page 865.
- Swatting the Sow Thistle in Saskatchewan,
Prairie Farm and Home, Regina, Sask.,
July 14th, 1915, page 25.
- A Twenty-Year Fertility Test,
Iowa Homestead, Des Moines, July
15th, 1915, page 6.
- After Harvest in the Grain Field,
Canadian Farm, Toronto, July 16th,
1915, page 2.
- War Orders in Canada,
Fred W. Field, *Monetary Times*,
Toronto, July 16th, 1915, page 5.
- Summary of Feeding Tests at Central
Experimental Farm with Cattle, Lambs
and Hogs,
Prof. Archibald, Dominion Animal
Husbandman, *The Ottawa Valley
Journal*, July 16th, 1915, page 11.
- Improving the Quality of our Native Small
Fruits,
Gordon Furrow, *The Globe*, Toronto,
July 21st, 1915, page 11.
- How the Fruit Grower May Increase
Profits,
E. F. Palmer, Assistant Director
Ontario Fruit Branch, *Canadian
Countryman*, Toronto, July 24th, 1915,
page 4.
- Harvesting, Palatability, Digestibility in
Crops,
Canadian Farm, Toronto, July 23rd,
1915, page 3.
- Some Real Farm Problems,
I. J. Mathews, Ingham County, Mich.,
The Ohio Farmer, Cleveland, Ohio,
July 24th, 1915, page 1.
- Solving City Problems through Rural
Agencies,
Nor-West Farmer, Winnipeg, July 20th,
1915, page 1915.
- The Prussians' Landschaft System of Rural
Credits,
Prairie Farm and Home, Regina, July
21st, 1915, page 2.
- Hot Weather Difficulties in Churning on the
Farm,
H. H. Dean, *Farmer's Advocate*,
London, July 22nd, 1915, page 1167.
- Methods of Raising Lambs for Market,
Prof. W. C. Coffey, *American Sheep
Breeder and Wool Grower*, Chicago,
July 1915, page 297.
- Water for the Farm Home,
The Canadian Countryman, Toronto,
July 24, 1915, page 5.
- The Saskatchewan Live Stock Special,
Farmer's Advocate, Winnipeg, July
28, 1915, page 919.
- Growing Flax for Fibre,
Louis Hartvigsen, *Grain Growers'
Guide*, Winnipeg, July 28, page 18.
- Co-operative Marketing of Wool in Quebec,
Prof. H. Barton, *Canadian Farm*,
Toronto, July 30, 1915, page 4.
- Selling our Apple Crop at a Profit.
Justus Miller, *The Canadian Country-
man*, Toronto, July 31, 1915, page 3.
- Latest Factor in Rural Improvement,
Helen McMurchie, *The Canadian
Countryman*, Toronto, July 31, 1915,
page 11.

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Minister.....	The Honourable Martin Burrell.
Private Secretary.....	William Ide, B.A.
Deputy Minister.....	Geo. F. O'Halloran, B.A., B.C.L.
Assistant Deputy Minister and Secretary....	Lt.-Col. A. L. F. Jarvis, I.S.O.
Commissioner of Agriculture.....	C. C. James, C.M.G., M.A., LL.D.
Chief Translator.....	C. E. Mortureux, B.S.A.

The Dominion Experimental Farms Branch.. Director, J. H. Grisdale, B. Agr.

On the Central Experimental Farm and twenty Branch Farms and Stations distributed over Canada, conducts research and experiments in animal, field, orchard, garden and greenhouse husbandry, distributes superior seeds, analyzes and tests fertilizers and feeding stuffs, studies diseases of plants and administers ordinances for their control, and demonstrates what are of value.

The Dairy and Cold Storage Branch..... Commissioner, J. A. Ruddick.

Encourages and assists in the development of the dairying industry and the improvement in the storage, transportation, sale and trade in agricultural products; administers the Dairy Industry Act (1914), the Cold Storage Act (1907), and the Cold Storage Warehouse Act (1914).

The Seed Branch..... Commissioner, George H. Clark, B.S.A.

Encourages the production and use of superior seed, the production of farm and garden crops, tests seeds for farmers and seed merchants and administers the Seed Control Act.

The Live Stock Branch..... Commissioner, John Bright.

Encourages and assists the development of the live stock industry.

The Health of Animals Branch..... Veterinary Director General, Frederick Torrance, B.A., D.V.S.

Administers the Animals Contagious Diseases Act and the Meat and Canned Food Act. Protects Canadian live stock from contagious diseases.

Entomological Branch... Dominion Entomologist, C. Gordon Hewitt, D.Sc.

Conducts investigations on insects in relation to agriculture, encourages the use of methods of prevention and control and administers the Insects and Pests Section of the Destructive Insect and Pest Act.

The Fruit Branch..... Commissioner, Donald Johnson.

Encourages the development of the fruit industry along commercial lines. Also administers Part IX of the Inspection and Sale Act, relating to fruit and fruit packages.

International Institute of Agriculture.. Commissioner, T. K. Doherty, LL.B.

Supplies Institute at Rome statistics and official information respecting agriculture in Canada and distributes in Canada, in the Bulletin of Foreign Agricultural Intelligence, corresponding information from fifty-two adhering countries.

The Publications Branch..... Editor and Chief, J. B. Spencer, B.S.A.

Distributes the publications of the Department and edits The Agricultural Gazette of Canada.

The Exhibition Branch..... Commissioner, Col. Wm. Hutchison.

Prepares and takes charge of Canada's buildings and exhibits at International Expositions.

University of Alberta Library



0 1620 0321 3244

